

Is Green Transformational Leadership the Panacea to Environmental Challenges in Africa? A Systematic Review of Literature

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Abstract

Modern organizations have developed ambitious environmental goals, but there is a gap between espoused goals and actual environmental practices and outcomes. Green transformational leadership (GTL) is viewed as one of the strategies that organizations can use to translate environmental goals into green outcomes. However, the literature examining the outcomes of green transformational leadership is fragmented and disjointed. This study sought to conduct a systematic review of studies on GTL outcomes for purposes of synthesis and presenting them on a single platform. A search was conducted on EBSCOhost that yielded 141 results out of which 36 articles made it to the final review. The analysis revealed that the majority of the studies on GTL have been conducted in Southeast Asia and focus on employee green behaviour as the outcome. Other outcomes include green creativity, green performance, and green resilience. The analysis reveals that the majority of studies utilize a quantitative approach predominantly employing cross-sectional designs, with a significant emphasis on identifying mediating and moderating factors that shape this relationship. Based on these findings, the review recommends a diversification of research methodologies to incorporate longitudinal, experimental and qualitative approaches to enhance understanding of GTL outcomes. The paucity of research on GTL within the African continent raises questions regarding the commitment of African countries towards the realization of sustainable development goals (SDGs). There is need to explore GTL in regions currently underrepresented in the literature, particularly the East African context, to gain insights into local practices and challenges.

Key Words: *Green Transformational Leadership, Green Outcomes, Employee Green Behaviour, Environmental Performance, Green Creativity*

1.0 Introduction

1.1 Background

Climate change is projected to lead to approximately 250,000 deaths per year between 2030 and 2050 (Cop et al., 2020). To reduce the impact of climate change and other environmental hazards, businesses are increasingly embracing greening initiatives. Businesses are recognizing that consumers are increasingly valuing sustainability, which can drive competitive advantages and enhance brand loyalty. Organizations are also aligning their operations international agreements like the Paris Agreement that seeks to curb the rise in global temperature (Abbass et al., 2022).

The concepts of carbon neutrality and carbon peaking targets are increasingly becoming prominent across the globe. Companies today are competing to make green changes in their management models to reduce their carbon footprint. According to the Global Reporting Initiative, over 12,000 organizations in more than 100 countries are using their frameworks for sustainability reporting indicating increasing levels of transparency in corporate environmental impacts (Curtis et al., 2021). Over 1,500 companies globally have committed to achieving net-zero emissions by 2050 or earlier (Zwicker et al., 2022). This figure includes major corporations across industries making public commitments to reduce their carbon footprints.

A survey by Deloitte involving 308 company executives in the United States of America revealed that 51.3% of organizations were committed to reducing overall energy use while 49.7% were committed to increasing energy efficiency (Motyka et al., 2020). About 44.8% of the companies were committed to switching to renewable sources of energy by a target year. Businesses are increasingly adopting circular economy principles to reduce waste with an estimated 50% of companies investing in circular initiatives. The number of businesses obtaining environmental certifications (such as ISO 14001) has been on the rise, with over 300,000 certificates issued globally as of recent years, indicating a commitment to environmental management systems (Peng et al., 2020).

A report published by the World Economic Forum emphasizes that over 80% of global supply chain leaders are implementing sustainability initiatives within their supply chains to mitigate environmental impacts (Zhang et al., 2020). A survey conducted by the European Commission (2024) found that around 70% of large EU companies published sustainability reports in 2020. This reflects a growing emphasis on transparency regarding environmental impacts. According to the European Sustainable Investment Forum, sustainable investments in Europe reached approximately €1.7 trillion in 2021, representing nearly 42% of all assets under management in the region (Balaguer, 2022). This significant growth highlights the increasing interest of investors in businesses that prioritize environmental, social, and governance (ESG) criteria.

In Africa, business involvement in environmental protection has also been gaining traction driven by a combination of regulatory developments, increased consumer awareness and recognition of the long-term benefits of sustainable business practices. About 70% of African countries have incorporated the Sustainable Development Goals (SDG) into their national development strategies (Adekunle, 2020). This has encouraged businesses to align their practices with the SDGs. Investment in green initiatives by private businesses is projected to increase to USD 200 billion

annually by the year 2030 (Youssef & Dahmani, 2024). Renewable energy capacity in the continent grew to 6% in 2021, with private businesses leading in investments in solar, wind, and other renewable energy projects (Chen et al., 2023). The African continent has an estimated carbon market potential of USD 35 billion that businesses are seeking to explore by the year 2030 (Igwe et al., 2023). Many businesses are increasingly focusing on waste reduction and recycling as part of their sustainability strategies seeking to generate economic opportunities that are estimated at USD 25 billion annually. More than 60% of agribusinesses in Africa are exploring sustainable practices like Climate Smart Agriculture, agroforestry, agroecology, and organic farming to meet both environmental goals and consumer demand (Chen et al., 2023). An estimated 70% of companies operating in water-intensive industries have begun implementing water-saving technologies and strategies.

Businesses in Kenya have also increasingly recognized the importance of environmental sustainability. About 76% of companies in Kenya have a CSR initiative with a substantial portion of these initiatives encompassing environmental conservation aspects like tree planting or water conservation (Koasidis et al., 2022). Renewable energy accounted for about 90% of new electricity generation in Kenya between 2019 and 2020 (Hagos et al., 2022). This reflects significant investments by businesses in solar, wind, and geothermal energy with companies like Safaricom and Equity Bank involved in solar power projects. Also, companies like AAR Healthcare Kenya and Stanbic Bank are highly committed to environmental Conservation. Over 100 green buildings have been constructed in Kenya with many contractors adopting sustainable building practices (Kenya Institute for Public Policy Research and Analysis, 2024). Green building initiatives include the use of energy-efficient systems and materials aimed at reducing the environmental footprint. There is also an increase in the number of firms implementing waste management initiatives.

As of 2021, around 50% of businesses had waste management policies in place or were working with local governments on waste segregation and recycling programs (Ishuga, 2024). The agriculture sector is also adopting green practices with about 35% of farmers having adopted sustainable agricultural practices such as organic farming and agroforestry driven by both market demand and training programs from businesses and non-governmental organizations (NGOs) (Autio et al., 2021). Over 50% of commercial banks in Kenya were increasingly providing financing for green projects and businesses (Hagos et al., 2022). This is an indication that the financial sector in Kenya is also recognizing the value of sustainable investments and is becoming a key driver in environmental conservation. Kenyan companies produced over 11 million carbon credits by 2020 through various projects including reforestation and clean energy initiatives, which they sold on international markets (Koasidis et al., 2022).

2.0 Literature Review

Green Transformational Leadership

Organizations' efforts to establish ambitious environmental goals may amount to nothing if the organizations do not develop suitable mechanisms and practices for translating these goals into actions and actual practices. In light of this, some organizations have devoted significant attention towards developing strategies and practices for implementing and actualizing environmental goals. One of these practices is green transformational leadership. Green transformational leadership (GTL), also known as environmental transformational leadership is a leadership approach where

the leader provides an articulate vision and goals related to the environment and inspires and motivates employees and other stakeholders to work towards this vision (Sanusi et al., 2023). GTL comprises four dimensions or elements: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration.

Idealized influence entails acting as a role model and empowering followers to emulate positive behaviours towards the environment through training and encouragement (Srouf et al., 2020). The concept of idealized influence describes a green transformational leader as a role model who displays high ethical standards on matters of the environment. Leaders who exhibit idealized influence are seen as exemplary figures, embodying the values and principles they advocate, which encourages followers to align themselves with the leader's vision and objectives (Lathabhavan & Kaur, 2023). They lead by example and are consistent in their actions and values. Green transformational leaders focus on providing an unmistakable idea to workers regarding what the organization should be doing regarding the environment (Jamshed et al., 2023). This vision provides a sense of purpose and direction, motivating individuals to strive towards achieving it. They also help subordinates understand the significance of protecting the environment and impart excitement to generate inventive and innovative ideas for protecting the environment. These leaders typically possess a charismatic personality, which helps them attract and inspire followers (Ozgul, 2022). Their presence and demeanour often instil a sense of motivation and commitment among team members. The leader also enhances workers' perceptions towards environmental issues by transforming their values and goals towards green management (Du & Yan, 2022). This tends to increase workers' interest in environmental issues leading to green organizational change. In addition, leaders who display idealized influence are often perceived as highly ethical and principled. Their commitment to integrity and ethical decision-making fosters a culture of trust.

Inspirational motivation entails empowering followers through idealism and energy to overcome emotional and physical hindrances (Mittal & Dhar, 2016). This concept is about making followers feel like they are part of something worthwhile. It is the ability to inspire and motivate followers by providing a compelling vision, fostering enthusiasm, and encouraging them to work towards achieving shared goals. Leaders who demonstrate inspirational motivation energize their teams, instil commitment, and foster a sense of purpose. Green transformational leaders motivate their follower to go beyond their self-interest and engage in green behaviours being guided by their moral commitment towards creating a sustainable planet (Suliman et al., 2023). They use charismatic power to create a feeling of collective responsibility among followers. The leader inspires followers to learn and develop their capabilities on a continual basis by committing themselves to new ways of thinking (Agrawal & Pradhan, 2023). The leader also embeds values and convictions related to environmental protection into workers. This approach ensures that workers continue to value the environment and pursue actions that conserve the environment even in the absence of the leaders (Akhtar & Anum, 2021). In addition, inspirational motivational leaders focus on changing employees' identity in favour of an identity that related to environmental conservation. They also demonstrate green inspirational motivation through the passion and optimism towards encouraging subordinates to engage in environmental protection (Nutrifitriyana & Muafi, 2023). Green transformational leaders often celebrate successes, acknowledge efforts, and recognize individual and team achievements.

Intellectual stimulation entails motivating employees to pursue environmental goals by spurring their cognitive and moral reasoning rather than using a set of rewards or punishments (Srouf et al., 2020). It refers to the ability of leaders to encourage creativity, innovation, and critical thinking among their followers. Leaders who demonstrate intellectual stimulation challenge existing assumptions, promote new ideas, and foster a culture of inquiry and open-mindedness. This aspect of leadership not only enhances problem-solving and innovation within teams but also empowers individuals to explore new perspectives and take initiative. It entails driving workers' motivation and strategic thinking on matters of the environment. Green transformational leaders use charisma rather than coercion to encourage followers to pursue environmental goals (Peng et al., 2020). The leader focuses on getting buy-in from employees regarding the importance of pursuing environmental goals rather than using sanctions and rewards. They challenge their followers to think outside the box and walk on least travelled paths and take firm actions and initiatives. Green transformational leaders promote an environment where team members feel safe to express their ideas, take risks, and propose solutions without fear of criticism (Zhang et al., 2020). This openness leads to diverse viewpoints and innovative thinking. Green transformation leaders also delegate power and authority to employees enabling them to work on novel ideas and be more effective in the organizations. The leaders encourage employees to challenge old ideas and ways of doing things and use new methods to address environmental challenges. They encourage followers to question the status quo and critically evaluate existing practices. This questioning promotes deeper analysis and fosters a culture that values continuous improvement. Intellectual stimulation fosters an approach to problem-solving that involves collaboration and brainstorming (Sutarmin et al., 2023).

Individualized consideration is a GTL practice that entails building close relationships with employees to strengthen their environmental values (Cop et al., 2020). It refers to the leader's ability to provide personalized support, mentorship, and attention to the individual needs and development of their followers. Leaders who practice individualized consideration strive to understand the unique strengths, weaknesses, and aspirations of each team member and work to create an environment that promotes personal and professional growth (Agrawal, 2023). Leaders with individualized considerations show genuine concern for the needs and well-being of their followers, fostering a supportive environment that encourages personal and professional growth. Individualized consideration gives followers a sense of pride and a feeling of belongingness. It also cultivates trust between the leaders and the followers thereby instilling a sense of connection, respect and loyalty (Elshaer et al., 2022). This relationship enables the leaders to transmit their environmental values and passion to their subordinates (Fatoki, 2023). Leaders with individualized consideration take the time to understand the individual needs and circumstances of their team members, providing tailored support to help them achieve their goals. They engage in mentoring relationships, offering guidance and feedback that fosters professional development (Marfo et al., 2024). This may include regular check-ins, constructive criticism, and encouragement. They also demonstrate empathy by being attentive to the emotional and psychological needs of their followers. They create a safe space for individuals to express concerns and seek support as well as promote opportunities for skill enhancement and career advancement, encouraging employees to pursue their aspirations and unlocking their potential.

Despite climate change being a big threat to humanity, many organizations are nowhere near being green. Many organizations do not demonstrate clear environmental impacts. Although many

organizations today have set ambitious environmental goals, there is an enormous challenge of translating these goals into tangible outcomes (Ababneh et al., 2021). There is a huge gap between organizations' environmental goals as captured in reports and surveys and the environmental outcomes and impacts of business organizations. The Emissions Gap Report 2023 illustrated that countries' current climate commitments under the Paris Agreement are far from what is necessary to limit global warming to 1.5 degrees Celsius (United Nations Environmental Programme, 2023). The report notes that, although commitments have been made, emissions are still projected to exceed the necessary reduction targets by 2.8 times by 2030 indicating a substantial gap between goals and outcomes. The Carbon Disclosure Project (CDP) reported that, while many companies have set Net Zero targets, only about 60% of these targets are supported by scientifically valid plans (Awewomom et al., 2024). Likewise, about half of the companies disclosing emissions reports are not on track to meet their targets, which reflects a significant discrepancy between statements and actual performance. A study by the Ellen MacArthur Foundation indicated that while many organizations have expressed commitment to circular economy principles, only about 9% of resources are being cycled back into the economy (Velenturf & Purnell, 2021). There is an urgent need to explore mechanisms that will assist organizations in translating declared objectives into actual practices. One such mechanism is GTL

GTL has been associated with several environmental outcomes such as green creativity, enhanced sustainability practices, entrenchment of employee green behaviours, and enhanced environmental performance. However, the existing body of research on GTL and its outcomes is notably fragmented. The research on GTL has evolved but remains dispersed across different countries, contexts, and industries. This lack of a cohesive framework makes it challenging to draw comprehensive conclusions regarding the effectiveness and implications of GTL. Without a clear understanding of how GTL influences environmental outcomes across different sectors and contexts, decision-makers struggle to identify best practices or tailor interventions that align with the principles of GTL. The absence of consolidated research findings limits the ability to establish evidence-based policies that encourage organizations to adopt green transformational leadership behaviours, ultimately stalling progress toward sustainability goals. For a practitioner, the lack of a synthesized knowledge base leaves them with vague or conflicting guidance on how to cultivate GTL within their organizations. Without a unified understanding of the key components and outcomes of GTL, organizations may misallocate resources or implement strategies that are ineffective or misaligned with their sustainability objectives. It is vital for leaders to understand not only the theoretical frameworks surrounding GTL but also the practical implications of their leadership on environmental outcomes. To address the aforementioned issues, there is a need for a systematic literature review that synthesizes existing research on GTL and its environmental outcomes. The review will be important in advancing efforts towards realization of the SDGs and creation of sustainable societies.

3.0 Methodology

A thorough search of papers published between 2014 and 2024 was done on the EBSCOhost Research Platform. EBSCOhost was an invaluable resource for conducting a systematic review on Green Transformational Leadership (GTL), providing a comprehensive and diverse range of scholarly articles, journals, and publications. One of the primary advantages of using EBSCOhost is its extensive database, which aggregates content from various disciplines, ensuring access to a wealth of research related to GTL including environmental studies, organizational behaviour, and

leadership theory (Gusenbauer, 2022). This multidisciplinary approach facilitates a holistic understanding of how GTL influences environmental outcomes. EBSCOhost also offers advanced search features, including Boolean operators, filters, and specific subject headings, which streamline the literature search process and improve the precision of results. This capability was critical for systematically locating relevant studies, distinguishing between various definitions and interpretations of GTL, and identifying gaps in existing research. In addition, EBSCOhost provides access to peer-reviewed articles, enhancing the credibility and reliability of the sources being reviewed (Bramer et al., 2017). These features made EBSCOhost not only a user-friendly platform but also a robust tool for building a solid foundation for the systematic review, ultimately contributing to more papers on green transformational leadership.

The search for literature specifically related to **Green Transformational Leadership (GTL)** began with a focused scope aimed at understanding its impact on environmental outcomes and sustainability practices within organizations. This initial exploration allowed for a foundational accumulation of relevant literature surrounding GTL, enabling a clearer assessment of existing research. However, as the search progressed, it became evident that the term “Green Transformational Leadership” was often supplemented or represented by alternative terminologies within the academic discourse. During the preliminary search, several additional keywords emerged that enriched the scope of inquiry. Notably, one such term was **“Environmental Transformational Leadership.”** This alternative phrase reflects similar concepts while potentially capturing a broader or distinct body of literature addressing leadership aimed at facilitating environmental change. Such keywords may include “sustainability leadership,” “eco-leadership,” or “transformational environmental leadership,” each carrying unique connotations and implications in the context of sustainability. By incorporating these additional keywords into the search strategy, the literature search became more comprehensive and nuanced. Utilizing varied terminology allowed for the identification of a wider array of scholarly articles, theories, and case studies related to GTL and its implications. This dynamic approach helped bridge gaps in the existing literature by uncovering relevant studies that may not have directly mentioned “Green Transformational Leadership” but nonetheless contributed valuable insights on the nuances and effectiveness of leadership practices geared toward environmental sustainability.

The initial search for literature on **Green Transformational Leadership (GTL)** yielded 141 results, providing a solid foundation for exploring this critical area of study. This substantial number of results indicates a rich landscape of research, suggesting that GTL is gaining traction in academic discussions related to leadership, sustainability, and environmental stewardship. Upon reviewing these 141 entries, it became apparent that many articles focused on various dimensions of transformational leadership in relation to environmental issues, even if not all explicitly employed the term “Green Transformational Leadership.” The results included empirical studies, theoretical frameworks, and case analyses from diverse fields, underscoring the interdisciplinary nature of the topic. The breadth of literature highlighted the importance of leadership in driving sustainable practices within organizations, a central tenet of GTL. Moreover, the varied results led to the identification of additional keywords such as **“Environmental Transformational Leadership,”** which were invaluable in refining the search process. By extending the scope with these alternative terms, the search could capture potentially relevant studies that may have been overlooked initially. The iterative nature of this exploration reveals the critical role that context-

specific language can play in literature searches, enabling a deeper understanding of how transformational leadership can effectively foster environmental responsibility.

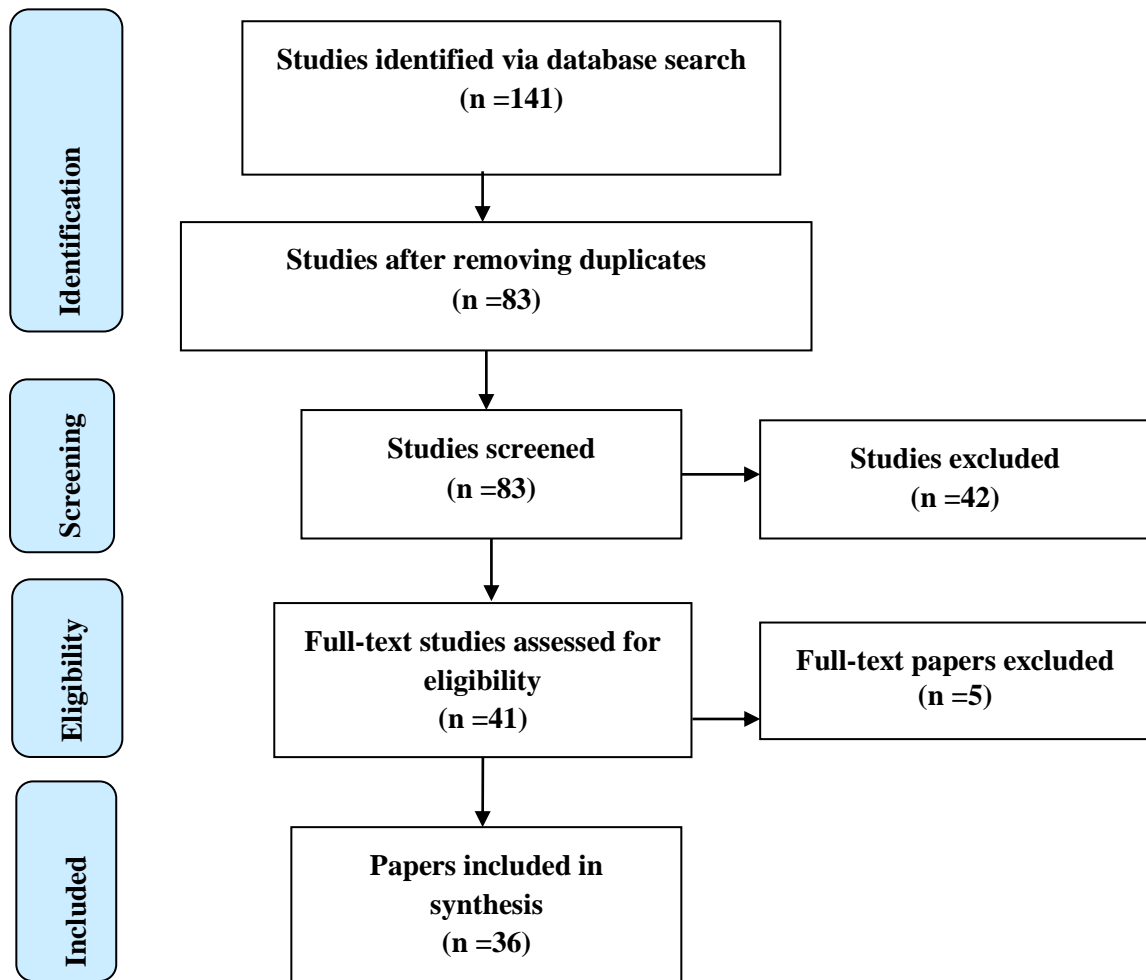
Document Selection and Eligibility Criteria

The 141 papers were retrieved and assessed using the following eligibility criteria:

1. **Focus on Green Transformational Leadership:** Only papers that explicitly explore Green Transformational Leadership and its effects on environmental practices, organizational sustainability, or related outcomes were selected. This ensured that the studies contribute directly to understanding how transformational leadership can influence green initiatives within organizations.
2. **Empirical Studies:** To maintain a high standard of evidence, only empirical studies that involve systematic data collection and analysis were included. This criterion allowed for the inclusion of research that presents findings based on real-world observations, surveys, interviews, or experimental designs, thus ensuring the credibility and applicability of the results.
3. **Published in Peer-Reviewed Journals:** Only articles that were published in peer-reviewed journals were included. Theses and dissertation reports, white papers, and unpublished conference papers were left out. Inclusion in peer-reviewed journals is crucial as it indicates that the research has undergone rigorous evaluation by experts in the field. This ensured a level of quality and integrity in the scholarship, making the findings more robust and trustworthy.
4. **Published After January 2014:** By setting the publication cut-off in January 2014, the review aimed to focus on more recent studies that reflect current trends, methodologies, and theoretical advancements in the field of Green Transformational Leadership. This was particularly important in a rapidly evolving area like environmental leadership, where new research continuously informs best practices and theoretical frameworks.

By applying these eligibility criteria, the researcher narrowed down the initial pool of 141 papers to a more manageable and relevant subset of 83 papers that meet the necessary standards for quality and relevance. This systematic approach facilitated a comprehensive review of the literature, ensuring that the subsequent findings contribute meaningfully to the understanding of Green Transformational Leadership and its implications for fostering sustainable practices in organizations.

An appraisal process was adopted enabled the researcher to identify the strongest studies for synthesis in their literature review. The researcher was able to minimize the burden of dealing with irrelevant content. Using a quality appraisal framework allowed for a structured comparison and ultimately informed the conclusions drawn from the literature review on Green Transformational Leadership. It also enhanced the rigour of the quality appraisal process enhancing the credibility and reliability of the literature review. The appraisal narrowed down the number of articles from 83 to 36.



4.0 Results and Discussions

Table 1: Organization of Studies by Country

Country	Number of Studies
Pakistan	7
India	6
Indonesia	6
Egypt	5
China	4
Turkey	3
South Africa	2

Ghana	1
Nigeria	1
Vietnam	1

Table 2: Summary of Studies on Green Transformational Leadership Research

WHERE?	Journal	Research design	Target population	Theories	DV-OUTCOME	Inferential statistical analysis followed
China	Journal 1	Cross-sectional survey	Employees of four ISO14001-certified companies representing the tourism, manufacturing, construction, and pharmaceutical industries.	Resource conservation theory	Employee green behaviour	Hierarchical multiple regressions
China	Journal 2	Cross-sectional survey	Employees from manufacturing enterprises	Self-determination theory	Employee green behaviour	Hierarchical multiple regressions
China	Journal 3	Experiment	Wechat members who were above 18 years and had full time jobs	Cue consistency theory and leadership substitute theory	Employee green behaviour	Correlation and regression analysis
China	Journal 4	Quantitative	Employees working in the research and development (R&D) teams of steel enterprises in China	transformational leadership theory	Green Creativity	Hierarchical linear modelling (HLM) and Monte Carlo simulations.
Egypt	Journal 5	Cross-sectional survey	employees of hotels	Transformational leadership theory	Employee green behaviour	Structural Equation Modelling (SEM)

Egypt	Journal 6	Cross-sectional survey	Entry level employees from five-star hotels	Resource-based view (RBV) theory.	Employee green behaviour	Structural Equation Modelling (SEM)
Egypt	Journal 7	Quantitative and cross-sectional.	Employees from three- and four-star hotels in Egypt.	N/A	Employees' environmental performance.	Structural Equation Modelling (SEM)
Egypt	Journal 8	Quantitative and cross-sectional.	First-line employees in hotels in Sharm El-Sheikh, Egypt	Transformational Leadership Theory Ability-Motivation-Opportunity (AMO) Theory Social Exchange Theory Expectancy Theory Regulatory Focus Theory (RFT)	Green Innovation (GI)	Structural Equation Modelling (SEM)
Egypt	Journal 9	Quantitative and cross-sectional.	Employees working in five-star hotels and category-A travel agencies in Greater Cairo, Egypt.	Resource-Based View (RBV) Transformational Leadership Theory	Green Creativity (GC)	Structural Equation Modelling (SEM)
India	Journal 10	Cross-sectional survey	employees of hotels	Resource-based view (RBV) theory and ability-motivation-opportunity (OMO)	Employee green behaviour	Structural Equation Modelling (SEM)

India	Journal 11	Cross-sectional survey	Employees of information technology firms	Resource-based view theory and social exchange theory	Employee green behaviour	Structural Equation Modelling (SEM)
India	Journal 12	Cross-sectional survey	Middle level employee working in top IT companies	Transformational leadership theory, social learning theory, social exchange theory, resource-based view (RBV) theory, ability-motivation-opportunity (AMO) theory	Employee green behaviour	Structural Equation Modelling (SEM)
India	Journal 13	Cross-sectional survey	Employees in 3–5-star hotels	Transformational leadership theory, value-belief norm theory	Employee green behaviour	Structural Equation Modelling (SEM)
India	Journal 14	Quantitative and cross-sectional.	Hotel employees in tourist locations of India	Componential Theory of Creativity, Transformational Leadership Theory and Organizational Culture Theory	Green Creativity (GC)	Structural Equation Modelling (SEM)
India.	Journal 15	Quantitative	Employees and managers of tourist hotels in Uttarakhand, India.	Green transformational leadership and green creativity	Green creativity	Structural Equation Modelling (SEM)

Indonesia	Journal 16	Quantitative and cross-sectional.	Employees in heavy equipment companies in Indonesia	N/A	Green Employee Performance	Structural Equation Modelling (SEM)
Indonesia	Journal 17	Quantitative and cross-sectional.	Employees from Ministry of Environment and Forestry of the Republic of Indonesia	Social exchange theory	Employee green behaviour	Structural Equation Modelling (SEM)
Indonesia	Journal 18	Quantitative and cross-sectional.	Employees of Mercu Buana University.	N/A	Employee Sustainable Performance	Structural Equation Modelling (SEM)
Indonesia	Journal 19	Quantitative and cross-sectional.	Employees working in tourist hotels in Bali, Indonesia.	Transformational Leadership Theory Job Crafting Theory Engagement Theory	Frugal Eco-Innovation (FEI)	Structural Equation Modelling (SEM)
Indonesia	Journal 20	Quantitative and cross-sectional.	hotel employees	Social Cognitive Theory	Green Creativity.	Structural Equation Modelling (SEM)
Indonesia	Journal 21	Quantitative and cross-sectional.	Employees from Small and Medium-sized Enterprises (SMEs) specializing in the embroidery sector in East Java, Indonesia.	Resource-Based View (RBV) and Ability Motivation Opportunity (AMO) theory.	Environmental Performance	Structural Equation Modelling (SEM)
Pakistan	Journal 22	Cross-sectional survey	employees of hotels	Resource-based view (RBV) theory and	1. Employee environmental	Not clear

				ability-motivation-opportunity (OMO)	behavior. 2. Hotel environmental performance	
Pakistan	Journal 23	Cross-sectional survey	Employees of five-star hotels	Social information processing theory	Employee green behaviour	Structural Equation Modelling (SEM)
Pakistan	Journal 24	Cross-sectional survey	Middle line managers from 3-star hotels	Transformational leadership theory, social information processing theory, and stakeholder theory	Employee green behaviour	Structural Equation Modelling (SEM)
Pakistan	Journal 25	Quantitative and cross-sectional.	The target population is the hotels in Pakistan. Who: Hotel managers	N/A	Environmental performance	Structural Equation Modelling (SEM)
Pakistan	Journal 26	Quantitative and cross-sectional.	The target population is hotels in Lahore and Islamabad, Pakistan.	Resource-Based View (RBV) and Ability-Motivation-Opportunity (AMO) theory.	Environmental Performance (EP).	Structural Equation Modelling (SEM)
Pakistan	Journal 27	Quantitative	employees and managers in large manufacturing companies in the textile, sugar, and cement industries	componential theory of creativity and social information processing theory	employees' green creativity	Structural Equation Modelling (SEM)
Pakistan	Journal 28	Quantitative and cross-sectional.	Middle-level managers in SMEs in Punjab Province, Pakistan	Ability Motivation Opportunity (AMO) Theory Resource-Based View (RBV)	Green Creativity (GC)	Structural Equation Modelling (SEM)

				Theory		
South Africa	Journal 29	Cross-sectional survey	Supervisors and mid-level managers in 3–5-star hotels	Social Influence theory	Employee green behaviour	Structural Equation Modelling (SEM)
South Africa.	Journal 30	Quantitative and cross-sectional.	Managers and top officials directly involved in environmental sustainability practices within SMEs, manufacturing, and construction sectors in Johannesburg, South Africa.	The ability, motivation, and opportunity (AMO) theory	Environmental Performance (EP).	Structural Equation Modelling (SEM)
Turkey	Journal 31	Quantitative and cross-sectional.	Hotel employees working in four- and five-star hotels in Istanbul, Turkey.	transformational leadership and organizational citizenship behaviours,	Green Creativity (GC)	Structural Equation Modelling (SEM)
Turkey	Journal 32	Quantitative and cross-sectional.	Business owner-managers in SMEs with an ISO 14001 certificate	Yes, the study mentions green transformational leadership and environmental orientation theories.	Green absorptive capacity.	Structural Equation Modelling (SEM)
Turkey	Journal 33	Quantitative and cross-sectional..	Employees in four and five-star hotels.	Broaden-and-build theory Job demand–resource (JD–R) theory Conservation of resource	Green team resilience	Structural Equation Modelling (SEM)

				theory		
Ghana	Journal 34	Quantitative and cross-sectional.	The target population includes all hotel staff in Ghana, specifically 600 staff/leaders/managers and owners/CEOs who work at hotels, as stated under "Population and Sample."	Resource-Based View (RBV) Theory, Transformational Leadership Theory	"Environmental Performance	Structural Equation Modelling (SEM)
Nigeria	Journal 35	Quantitative and cross-sectional.	All hotels in Kano, Nigeria (205 registered hotels)	Ability Motivation Theory	environmental performance	Structural Equation Modelling (SEM),
Vietnam	Journal 36	Quantitative and cross-sectional.)	Managers and directors of SMEs in Ho Chi Minh City	Natural Resource-Based View (NRBV)	Environmental Performance (EP) and Firm Performance (FP).	Structural Equation Modelling (SEM)

3.2 Outcomes of Interest in Green Transformational Leadership Research

Table 3: Cross-Tabulation of Country and Outcome Variable

Country	EGB	GC	EP	Others
China	3	1	0	0
Egypt	3	1	0	1
India	4	2	0	0
Indonesia	1	1	3	1
Pakistan	2	2	3	0
South Africa	1	0	1	0
Turkey	0	1	0	2
Ghana	0	0	1	0
Nigeria	0	0	1	0
Vietnam	0	0	1	1

Table 4: Indicators used to Operationalized the Outcome Variables

EGB	GC	EP	Other Outcomes
Recycling habits	New idea generation	Organizational carbon footprint	Green knowledge acquisition
Energy consumption	New recycling programmes	Water usage	Green knowledge diffusion
Water conservation	Development eco-friendly materials	Waste generation	Green knowledge integration
Commuting behaviour	Number of new green products	Energy consumption	Learning capacity
Paper usage	Number of new green services	Corporate philanthropy	
Choice of printing material	Number of new green processes	Compliance with EV regulations	
Water reduction habits		Carbon intensity	
Turn off lights			
Sorting garbage			

Table 5: Social Context of GTL Research

Sector/ Context	EGB	GC	EP	Others
Hotel employee/ manager	8	6	5	3
SME owner/ manager		1	3	1
Manufacturing employee	1	1	2	
Employee of tech firms	2			
Government employees	1			
Social media users	1			
University employees			1	
Cross-sectorial	1			

Table 6: List of Theories in Identified Journals

S/N	Theory	Frequency
1	Resource-Based View (RBV) theory	10
2	Ability-Motivation-Opportunity (AMO) theory	9
3	Transformational leadership theory	9
4	Social exchange theory	4
5	Social information processing theory	3
6	Componential theory of creativity	2
7	Broaden-and-Build theory	1
8	Conservation of resource theory	1
9	Cue consistency theory	1
10	Engagement Theory	1
11	Environmental orientation theories	1
12	Expectancy Theory	1

13	Job crafting theory	1
14	Job demand-resource (JD-R)	1
15	Leadership substitute theory	1
16	Natural Resource-Based View (NRBV)	1
17	Organizational Culture Theory"	1
18	Regulatory Focus Theory (RFT)"	1
19	Resource conservation theory	1
20	Self-determination theory	1
21	Social Cognitive Theory	1
22	Social influence theory	1
23	Social learning theory	1
24	Stakeholder theory	1
25	Value belief norm theory	1

Table 7: Theory by Outcome

Theory	EGB	GC	EP	Others
Resource Based View	5	2	3	
Ability Motivation Opportunity	3		5	1
Transformational Leadership theory	3	3	1	2
Social information processing theory	2	1		
Componential theory of creativity		2		
Others	6	3	1	5
No theory	1		1	

Table 8: Research Design by Outcome

Sector/ Context	EGB	GC	EP	Others
Cross-sectional survey	13	8	10	4
Experiment	1			

Table 9: Inferential Statistical Procedure used

S/N	Inferential Statistical Analysis	Frequency
1	Structural equation modelling	30
2	Regression analysis	6
3	Correlation	2
4	Monte Carlo simulation	1

Table 10: Inferential Statistic by Outcome Variable

Theory	EGB	GC	EP	Others
Structural equation modelling	10	6	10	4

Regression analysis	4	
Correlation	2	
Monte Carlo Simulation		1

Table 11: Mediating Variables

EGB	GC	EP	Other Outcomes
Organizational pride	Green creative process	EGB	Team engagement
Green HRM	EGB (2)	Green HRM (2)	Team resilience
Green creativity	Organizational culture	Green creativity	
Personal imitative	Green organizational identity (2)	Green innovation	
Green work engagement	Green work engagement		
Green empowerment	Green job crafting		
Organizational commitment	Green HRM		
Moral reflectiveness	Green thinking		
Green mindfulness			

Table 12: Moderating Variables

EGB	GC	EP	Other Outcomes
Environmental value congruence	Green innovation strategies	Individual employee behaviour	Work engagement
Green organizational identity	Organizational support		
Green self-efficacy	Promotion focus		
Environmental passion	Resource commitment		
Perceived meaningful work	Internal environment orientation		
Environmental concerns	External environment orientation		
Green organizational support			

Discussion

The analysis of the scope of GTL research by number of studies conducted in different geographic locations provides valuable insights into the global landscape of GTL research. The diversity of countries involved in the research enriches our understanding of GTL and its application across different cultural contexts. By understanding how GTL is perceived and practiced across different cultures can develop more effective strategies for promoting sustainability and environmental responsibility globally. The findings of this analysis provide a foundation for future research on GTL, highlighting areas where further research is needed to better understand this important concept. In Pakistan, four studies have placed a lot of emphasis on the concepts of green creativity and innovation suggesting that these are important issues in the country. The scope of the studies is also both as they examine both direct and indirect relationships between GTL and GC.

The studies examined the direct and indirect relationships between GTL and various outcomes such as employee green behaviour, employee taking charge behaviour, employee environmental performance, green creativity, green innovation, green absorptive capacity, team resilience, work engagement, and environmental performance. The most frequently investigated outcome in GTL research was green employee behaviour (EGB). This is a crucial finding, as it suggests that researchers are primarily interested in understanding how leaders' behaviour and actions influence employees' environmentally responsible behaviours. EGB refers to the actions and attitudes of employees that promote environmental sustainability, such as reducing waste, conserving energy, and adopting eco-friendly practices. The focus on the effect of GTL on GEB is likely due to the growing recognition of the importance of environmental sustainability in organizations. As organizations face increasing pressure to reduce their environmental impact, leaders are adopting strategies to encourage employees to adopt sustainable behaviours.

Engaging in pro-environmental behaviours is crucial to the attainment of organizational environmental goals because employees are the agents responsible for implementing organizational environmental goals (Priyadarshini et al., 2023). Further, employees' pro-environment behaviours contribute to the successful implementation of organizational environmental policies. If an individual does not engage in environmental-friendly activities, the realization of the overall environmental policy remains a challenge for organization (Du & Yan, 2022). Given the importance of employee pro-environmental behaviours, understanding the dynamics that lead to these behaviours within an organization is important.

A substantial number of studies across the various countries examined the impact of green transformational leadership (GTL) on green creativity and innovation. This is a crucial finding as it suggests that researchers are interested in understanding how leaders can inspire and motivate employees to develop innovative solutions that address environmental sustainability challenges. Green creativity refers to the generation of new and innovative ideas that have a positive impact on the environment, such as developing sustainable products, processes, or services. Green innovation, on the other hand, refers to the implementation of these new ideas into practice, leading to environmental benefits. The relationship between GTL and green creativity and innovation is critical, as leaders who exhibit transformational leadership behaviours can inspire and empower

employees to think creatively and develop innovative solutions that address environmental sustainability challenges.

The most frequently research social context is the hotel. Twenty-two of the studies representing 61.1% of all identified studies targeted the population of hotel employees or managers. This could imply that the issue of environmental protection has a lot of significance to the hotel and hospitality industry hence the heavy investment of research on green transformational leadership. This finding could also be an indication that the hotels face unique challenges in adopting sustainable practices and managing environmental impact hence the investment in studies on green transformational leadership. Hotels are also highly customer-centric, and guests expect sustainability practices to be integrated into their stays. This trend may have created an impetus for hotel to explore ways for enhancing environmental sustainability such as the use of green transformational leadership. The fact that 44.4% of the studies targeted hotel employees suggests that researchers recognize the crucial role that frontline staff plays in implementing green initiatives.

The SME context has been fairly researched with 5 studies translating to 13.9% of all the identified studies being conducted in this context. This could be attributed to the fact that SMEs are the backbone of economies across the globe accounting for 90% of all businesses and 50% of all employment (World Bank, 2019). Consequently, research on green transformational leadership is bound to be biased towards this context. Since the sector accounts for the bulk of businesses globally it makes sense for researchers to direct sustainability efforts towards the sector including exploring the potential of green transformational leadership in encouraging the adoption of sustainable practices.

The manufacturing industry has also been fairly researched as 4 studies accounting for 11.1% of all identified studies were conducted in this context. This could also be an indication that the manufacturing industry has unique challenges when it comes to the adoption of sustainable practices. The focus on this industry in green transformational leadership research highlights the need for tailored solutions that address the specific challenge. The focus on the manufacturing industry could also be attributed to the fact that the manufacturing industry has a significant environmental footprint in terms of energy consumption, water usage, waste generation, and pollution. The environmental footprint of the industry has made the adoption of sustainable practices a priority.

Two studies were conducted in the context of technology firms, one study was conducted in a government institution, one study targeted social media users, and one study was conducted in the university setup. The study by Chen and Wu (2022) was unique because it encompassed firms from four different industries namely: tourism, manufacturing, construction, and pharmaceutical industries. The multi-industry approach makes the findings of this study more generalizable across different sectors rather than being limited to a single industry. The study provides better insights into green transformational leadership as a cross-industry phenomenon. The study also enables a comparison of green transformational leadership practices and outcomes in different industries. For example, the study may shed light on the differences in the application of green transformational leadership in the tourism industry compared to the manufacturing industry as well as highlight common challenges and opportunities.

Thirty two out of the 36 articles that were identified were anchored on at least one theory. This implies majority of the studies on green transformational leadership (88.9%) are anchored on theories. This is an indication that the majority of researchers in the field recognize the importance of theory in guiding their research and seek to contribute to the development of knowledge by testing, extending or applying theoretical frameworks related to green transformational leadership. A total of 25 different theories have been used in the studies. This diversity implies that green transformational leadership is still developing and thus there is no single theoretical perspective to explain this practice. The diversity of theory may also be a reflection of the diversity of variables being examined in the study.

The review has established a dominance of quantitative methods in GTL research, which may lead to a lack of attention to context-specific factors that shape the adoption and implementation of green transformational leadership practices. By neglecting qualitative methods, researchers may be overlooking important variables that are critical to understanding the success or failure of these initiatives. This gap suggests a potential limitation in fully capturing the complex dynamics and contextual nuances of GTL's influence on green outcomes. Moving forward, integrating diverse methodological approaches could enhance the comprehensiveness of GTL research offering richer insights into how sustainable leadership practices can be effectively implemented and optimized across various sectors and organizational settings.

The review has also established a widespread use of Structural Equation Modelling (SEM) as a method of inferential analysis in GTL research. One reason is the complexity of the research topic itself, which requires the analysis of multiple variables and their relationships. SEM's ability to simultaneously model multiple relationships between variables, test hypotheses, and estimate latent constructs makes it an attractive choice for researchers seeking to examine the intricate dynamics of green transformational leadership. In addition, SEM's flexibility in accommodating various types of data including both continuous and categorical variables may have been appealing to researchers working with diverse datasets. Although SEM is a powerful tool for analysing complex relationships between variables, its over-reliance on this method may lead to a lack of depth and breadth in understanding the phenomenon.

Only one of the 36 articles on green transformational leadership failed to test mediating or moderating relationships. This suggests that GTL researchers are generally interested in understanding the underlying mechanisms and boundary conditions that influence the impact of GTL on green outcomes. GTL researchers are moving beyond simply examining the direct effects of GTL and are instead seeking to understand how it interacts with other variables to influence outcomes. Green HRM was the mediating variable that cut across most outcome variables. Green HRM feature in article on EGB, GC, and EP. This implies that green HRM is also an important concept in sustainability research.

5.0 Conclusion

The analysis of green transformational leadership (GTL) research reveals significant regional disparities, with a notable concentration of studies in South Asia and a growing interest in various Asian countries, particularly India, Pakistan, and Indonesia. These countries collectively represent a substantial portion of the available literature, highlighting their increasing engagement with GTL, likely driven by urgent environmental challenges and economic growth. The findings underscore

the Asian region as a burgeoning hub for GTL research, indicating a rising awareness of environmental sustainability and the need to develop effective leadership strategies. Additionally, the presence of diverse studies examining various aspects of GTL, such as its impact on employee behaviours, green creativity, and innovation, demonstrates the multidimensional nature of this leadership style and its crucial role in addressing global environmental issues.

This synthesis also highlights the prominent role of employee green behaviour (EGB) as the most frequently cited outcome, reflecting the critical importance of individual employee actions in fostering environmental sustainability within organizations. With 14 out of 36 articles reporting on EGB, it is clear that organizations are prioritizing practices that encourage discretionary pro-environmental behaviours among employees. Furthermore, the review also illuminated green creativity and environmental performance as significant outcomes, with variations observed across different regions. For instance, while Indian and Chinese studies predominantly focus on EGB, Indonesian and Pakistani research places greater emphasis on measuring tangible environmental performance outcomes. These findings underscore the multifaceted nature of GTL and the need for tailored approaches that consider regional contexts when fostering employee engagement and driving organizational sustainability efforts.

The analysis of research methodologies in green transformational leadership (GTL) indicates a significant reliance on cross-sectional survey designs, with 97.2% of the 36 articles employing this method. This predominance underscores a potential limitation in the rigor of causal inferences that can be drawn from these studies, as cross-sectional designs primarily provide snapshot data without capturing temporal dynamics or contextual factors that may influence the relationships between variables. While the use of surveys has allowed for efficient data collection and quantitative assessment of GTL's influence on sustainability outcomes, it has also led to an underrepresentation of diverse research methodologies, particularly qualitative approaches, which could enrich the understanding of leader-follower dynamics and organizational contexts influencing GTL.

The majority of studies have concentrated on identifying the mediating and moderating factors that influence the relationship between GTL and green outcomes, providing valuable insights into the mechanisms through which GTL affects these outcomes. Diverse mediating variables such as organizational pride, green HRM practices, green creativity, and green empowerment, alongside moderating factors like green self-efficacy and environmental value congruence, demonstrate a comprehensive exploration of the complex interplay between leadership styles and employee environmental behaviours. The overarching trend reflects a move towards addressing nuanced relationships and contextual factors, highlighting the depth of inquiry within the field.

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