

Green Transformational Leadership on Green Creativity: A Quantitative Study within the Ghanaian Manufacturing Industry

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Abstract

This research paper is going to investigate the role of green transformational leadership in green creativity within the Ghanaian manufacturing industry. The study used a quantitative method of acquiring research evidence. The main source of the data was a survey of 200 employees belonging to different manufacturing companies in Accra, Ghana. The source of secondary data included a review of the relevant literature and documents through documentary sources. The research displayed that green transformational leadership influences green innovation in a large, favorable way. This analysis also revealed that employees feel that their bosses contribute to realizing their new ideas and developing them. This makes them more committed and eager to the environmental initiatives in the organization. This paper revealed that the green activities of the organizations have saved them quite a lot of money, have enhanced their environmental performance, and also strengthened their brand and reputation. This study shows that manufacturing companies should keep spending money on training their executives in green transformational leadership and giving their workers chances to work on creative and green innovation projects. The study also says that the industry should keep track of and judge how well its green efforts are going, and let its stakeholders know how they are doing. In conclusion, this study enhances the existing body of knowledge on green transformational leadership and green creativity. It also shows how these ideas could work in a country like Ghana that is still growing. This research also has practical implications for other organisational managers and leaders looking to improve their green performance and competitiveness.

Keywords

Green Transformational Leadership, Green Creativity, Green Performance

1. Introduction

It is becoming a widely observed trend that organizations opt to adopt green management solutions to reduce corporate waste (Li et al., 2020). At the same time, the importance of effective leadership as a key determinant in guiding individuals and organisations as a whole has been recorded through research. Modern leadership models will therefore be incorporated into the human-resource operations to incubate innovation among the employees (Tu & Lu, 2016). Green transformational leadership is a style described by the acts and actions that inspire people to pass environmental performance standards and aim ecological goals (The et al., 2013). Researchers conclude that such an attitude to leadership plays a crucial role in enhancing the organizational environmental performance through employee empowerment (Ruepert et al., 2016). After controlling transactional leadership, transformational leadership still proves to be a significant driver of multiple performance measures (Liu & Yu, 2023). Transformational leaders play the role of explaining things to subordinates, including their roles, performance standards, and individual growth goals, therefore, winning their complete loyalty (Yukl et al., 2013; Katou & Budhwar, 2010). This type of leadership establishes an exciting, innovative culture through processes that include compensation systems, communication systems, institutional practices, and procedures (Ahmad et al., 2014). Initially proposed by Burns in 1978, transformational leadership implies that a positive effect on the corporate environmental responsibility and green creativity has empirically been associated with it (Atiku et al., 2014; Aydogmus et al., 2018; Sun et al., 2022).

Green creativity involves generating new ideas for eco-friendly products, services, or processes that are innovative, original, and valuable (Chen & Chang, 2013). Green companies value green creativity for developing unique environmental solutions, and existing literature confirms its role in promoting green innovation, sustainability, and long-term viability (Singh et al., 2020). Specific employee tasks at different managerial levels are essential for effective green product development (Suparna et al., 2021). Due to market demand for eco-friendly products, green creativity has become a strategic tool for many companies (Chen & Chang, 2012; Chen, 2018; Sheu, 2014). Eco-friendly innovation requires green creative behaviors and is the initial step in green innovation, especially in the manufacturing industry (Jia & Zhang, 2018). Green transformational leadership significantly boosts creativity (Elkins & Keller, 2003). However, limited research explores the connection between green transformational leadership and green creativity. Different leadership approaches are used based on the guidance, influence, and authority given to employees (Mohiuddin, 2017). Innovation and strong leadership are key drivers for motivating employees and improving organisational performance. According to Adriana et al. (2020), a major challenge facing organizations today is preventing environmental degradation and improving our surroundings. Multinational corporations relocating production to developing countries increase this threat's impact on vulnerable nations. Therefore, raising aware-

ness of eco-friendly practices is vital (Chen et al., 2016).

Major global issues include climate change, ocean acidification, biodiversity loss, pollution, deforestation, and severe weather events, all worsening over time, especially affecting developing countries like Ghana. Environmental activism is gaining momentum due to these issues. Consequently, businesses in Ghana and similar nations are adopting green practices, with top management bearing most of the responsibility (Mittal & Dhar, 2016). Many manufacturing companies are now using eco-friendly methods and sustainable innovation as a way to get ahead of the competition (Dreu et al., 2020) because products that are in line with trends tend to attract customers. There is a lack of research on the impact of green transformational leadership on green innovation in Ghana's manufacturing sector, which is an important part of the economy (Li et al., 2020; Sun et al., 2022). According to the research, transformational leadership contributes towards increased levels of creativity in employees (Mittal & Dhar, 2015; Salas-Vallina & Alegre, 2018; Caldera et al., 2019). There is a need to carry out further research that can help explain thoroughly the relationship between environmentally sustainable innovation and green transformational leadership. There is a need to take a closer consideration of the impact of green transformational leadership on green creativity, therefore resulting in products that are more environmentally friendly and in the best interests of the organization in its entirety. There is also a need to examine carefully the hurdles that managers are facing when they make an effort to stimulate green innovation. This paper seeks to prove that environmental awareness can be developed through green transformational leadership that helps employees to participate in environmental innovations. This will enable managers to understand more about the application of green transformational leadership to make their companies work more effectively and have new green ideas. It will also make them know why leadership is so crucial in the running of a business in a manner that is conducive to the environment.

2. Literature Review

2.1. Green Transformational Leadership

The green transformational leadership is a vital and significant asset in the environmental management systems of most organisations. Previously, substantial and unique effects of transformational leadership on encouraging team members to innovate, thus affecting business success, were clearly shown by the previous studies (Boehm et al., 2015; Pasha et al., 2022). Similar to the transformational leadership concept presented by Bass (2015), the concept of green transformational leadership presented by Chen and Chang (2013) builds on the initial form of transformational leadership. Green transformational leadership can be characterised by leadership behaviours to inspire followers to work on environmental goals and have a motivation to perform ecologically better than expected (Robertson, 2017). Peng et al. (2019) describe leadership transformational that is green as one that involves leaders in straightforward interaction with individuals to achieve

green goals and motivate employees to develop behaviours that are environmentally friendly and surpass expectations. According to empirical evidence, leaders and their features influence the process of innovating organisations greatly, and, in many cases, they act as drivers of better performance in the environment (Andriopoulos, 2016), as Halbesleben et al. (2013) and Lu et al. (2022) also say. A thorough review of the existing literature allows one to notice that a few scholars support the idea and provide evidence pointing out that green transformational leadership has a significant influence on creativity (Woodman et al., 2013; Mittal & Dhar, 2015, 2016).

Transformational leadership comprises four fundamental dimensions: intellectual stimulation, individualised consideration, charisma, and inspirational motivation (Bass, 2015). The charismatic influence of a transformational leader encourages the emergence of inspirational concepts among their followers, consequently earning their admiration and allegiance. Personalised consideration enables the transformational leader to foster a sense of interconnectedness among their followers, promoting mutual concern. Furthermore, through inspirational motivation, the transformational leader not only provides clear guidance for the organisation but also elucidates how the envisioned objectives can be accomplished. The intellectual stimulation capacity of a transformational leader empowers them to stimulate the cognitive faculties of their followers, thereby facilitating the growth and enhancement of their creative abilities (Avolio et al., 2019; Gong et al., 2019; Mittal & Dhar, 2016). Green transformational leaders are individuals who exhibit unconventional thinking, embrace risk-taking, and champion innovative ideas (Shin & Zhou, 2003; Gong et al., 2019). Prior research consistently reveals a substantial connection between transformational leadership and workforce innovation (Shin & Zhou, 2003; Mittal & Dhar, 2015).

The ability to engage employees in thinking creatively and introducing new ways to solve problems is commonly described as the characteristic feature of transformational leadership, as it actively supports, encourages, and enables individuals implementing the confrontation of new challenges (Jung et al., 2003; Sarros et al., 2008). It is empirically proven repeatedly that when it comes to exercising authority, such leaders will give power to staff, allowing them to follow some of their unique ideas to enhance organisational performance (Jung et al., 2003). Green transformational leadership construct is in line with the principles voiced by Bass (2015), Gardner and Avolio (2018), and Chen and Chang (2013). These scholars lay a lot of stress on the necessity of the leaders to create environmentally responsible behaviour among employees by incorporating green behavioural goals with a true sense of ecological sustainability and portraying eco-friendly practices inside the organisation. Based on the above, it is possible to say that green transformational leadership can also be defined as a leadership approach that inspires and motivates followers to behave in a way that would lead to green results and promote sustainability at the workplace (Du & Yan, 2022).

2.1.1. Mechanisms of Green Transformational Leadership

The concept of green transformational leadership has gained significant prominence in research focusing on sustainability and leadership in recent times. Environmental responsibility is prioritized over more traditional transformative leadership in this leadership strategy. Green transformational leadership is exemplified by leaders with visions and willingness to apply influence so as to encourage their subordinates to adopt environmentally conscious practices. For organizations that seek to apply sustainable leadership practices, it is imperative for them to understand the antecedents of green transformational leadership. The next section will review the literature on the antecedents of green transformational leadership with the use of relevant research and theory for critical discussion.

Environmental Consciousness: As stated by Kramer (2017), environmental consciousness promotion is one critical precursor for the development of green transformation leadership. When leaders are well-informed about environmental issues and the significance of providing solutions for the environmental challenges faced today, they are more inclined to apply green transformation leadership strategies. Environmental consciousness involves the understanding of diverse environmental issues and the implications they have on today's society as well as the future generations and economy. In addition to that, there is the need to stay updated on the most recent research findings and innovations within the field of environmental sustainability. Strong environmental knowledge is necessary for green transformational leaders to effectively incorporate environmental considerations into their leadership style, set sustainability targets, and inspire their followers to act sustainably (Waters, 2013).

Ethical Principles: Ethical standards are the cornerstones of green revolutionary leadership. Leaders who prioritize environmental sustainability and who uphold high ethical standards are more likely to engage in green transformational leadership techniques (Madsen & Ulhi, 2016). Ethical leaders are motivated by concepts like ecological leadership, social responsibility, and equitable interactions across generations (Atiku, Chitakunye, & Fields, 2014). They view environmental responsibility as a moral obligation. They genuinely care about sustainability, and they provide a good example by leading by example. The ethical beliefs that serve as the basis for the moral decision-making processes of green transformational leaders shape their vision, inspiration, and actions.

Leadership Competencies: These are the fundamental components of green transformative leadership. To successfully tackle the multifaceted nature of sustainability issues, green transformative leaders should be ready to make strategic environmentally conscious choices and possess the necessary skills and abilities (Sharma & Sharma, 2017). Some of these skills include strategic thinking, systems thinking, innovation, teamwork, and communication. Green transformational leaders must think strategically about the long-term implications of their decisions on the environment, engage in systems thinking to understand the interconnected nature of ecological problems, foster creativity in the creation of environmentally friendly solutions, collaborate with stakeholders to promote collective

action and communicate effectively if they are to inspire and motivate their followers to pursue sustainability goals (Robertson, 2017).

Organizational Culture: The birth and growth of green transformational leadership is significantly influenced by organizational culture. Leaders working in organizations with an effective ecological culture, where sustainability is established in company principles, norms, and practices, are more likely to exhibit green transformational leadership behaviors (Butt et al., 2024). A supportive corporate culture is required for green transformational leaders to increase environmental knowledge, support sustainable initiatives, and motivate workers to take pro-environmental actions. The organisational culture fosters collective perception of the importance of sustainability to the organisations and this contributes to green transformational leadership. To make employees contribute to the achievement of long-term objectives of the organisation, leaders should introduce new ideas, cooperate with different stakeholders to support the works of the group, and communicate effectively and efficiently (Robbins & Sanghi, 2017).

Stakeholder Demands: Strong demands from stakeholders serve as antecedents to green revolutionary leadership. Stakeholders, including consumers, shareholders, lawmakers, and civil society organizations put pressure on leaders to solve environmental issues, and they are more prone to embrace a green transformational leadership style (Boiral, 2017). The stakeholders are putting more pressure on organisations to be environmentally responsible and are putting managers and CEOs under scrutiny in regard to environmental performance of their organisation (Rajagopalan & Zhang, 2018). Green transformational leadership is one of the most preferred resources in the environmental management systems of most organizations.

2.1.2. Antecedents of Green Transformational Leadership

A green transformational leadership focuses on the extent to which a leader is in a position to make people care about the environment. It is an important style of leadership that has attracted a lot of attention. This review of literature aims to delve into the origins of green transformational leadership, encompassing both the individual and environmental factors that foster its emergence and development. While green transformational leadership is a pivotal element within organizations, it's noteworthy that certain individual factors, such as green intrinsic and extrinsic motivation, are essential yet conspicuously missing from the existing body of literature.

The green intrinsic motivation concept that forms part of the literature on sustainable behavior can be defined as the self-instigated incentive that leads people to express environmentally responsible behaviors due to the satisfaction and fulfilment that they receive from realizing it. Based on Chen et al. (2015a), we hypothesise that green intrinsic motivation arises when individuals, including employees, feel that the origin of their motivation is internal. Such as the case of the actors that have a true sense of love towards the environment and dedication to being green in generation tend to implement initial steps towards the preservation

and conservation of the ecological systems, thus preventing the upcoming damage due to their activities, organizational policies, or end up to their sectors of operation. This outlook aligns with the position of [Ojo et al. \(2019\)](#), who confirm that the diffusion of green information technology is the key to attaining sustainable information-technology devices production, use, and end-of-life. In this model, we would argue that to become able to undertake green information technology practices, employees must first be motivated by green intrinsic motivation. Specifically, the people who possess the necessary inner enthusiasm and love of nature take a central place in the fight against the negative outcomes of information-technology production, the excessive use of carbon-based materials, excessive energy consumption, and the growing quantities of waste. These phenomena have been discussed by [Yong et al. \(2019\)](#). Green intrinsic motivation means having strong love and commitment to the environmental protection. An example is where engineers are in the process of devising their new projects which will entail recycling old motor batteries, a process that will reduce pollution as well as wastes, the engineers will be motivated by the need to invent new products that are environmentally friendly and durable. This is the reason why this motivation consists of a true affection of nature. The more intrinsically motivated employees become to become green, also the more likely they will be able to come up with creative ideas that can help the environment. This will cause them to produce something that is environmental friendly and durable.

Extrinsic motivation of sustainability may enable the staff to become more creative and environment-friendly. When individuals anticipate the outcome of rewards to others, or acceptance by others, or a consequence of low penalties, people will engage in practices that are environmentally sound with a view towards decreasing, widening effectiveness, and saving the environment ([Wu & Chen, 2014](#)). This is referred to as green extrinsic motivation. Green extrinsic motivation applies when employees perform activities that are beneficial to the environment in order to receive something outside the employee. Scientists, for instance, may look for green incentives like cash bonuses, prizes, or recognition to help them come up with ways to make IT devices that are less harmful to the environment ([Saeed et al., 2019](#)).

2.2. Green Creativity

[Fiorineschi et al. \(2020\)](#) define creativity as the capacity to generate novel and beneficial concepts. [Awan et al., \(2019\)](#) assert that green creativity is essential for green innovation. [Chen and Chang \(2013\)](#) were the first to come up with the term green inventiveness. They defined it as the creation and use of new products and processes that are meant to help the environment. This idea makes it easier to reach environmental goals and lowers the environmental impact during the whole process of making and using a product. As a result, it helps businesses improve their production capacity, improve their reputation, and reach new markets. [Chen and Chang \(2013\)](#) further categorized green creativity into two distinct types:

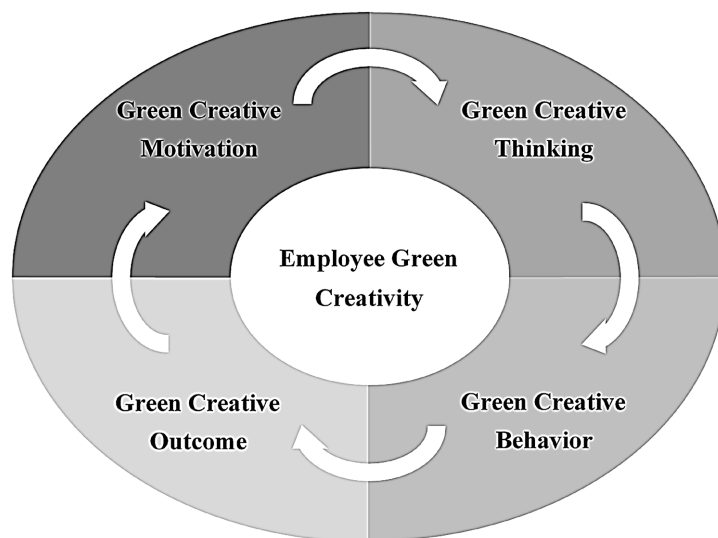
green radical innovation and green incremental innovation. The value of green creativity becomes apparent when an organization possesses a significant competitive advantage at both the local and global levels and actively supports innovation. Green creativity plays a pivotal role in enhancing the environment by providing energy solutions and addressing societal needs in environmentally responsible ways, subject to stringent environmental controls, without depleting natural resources (Habib & Sanaa, 2021; Al-Bakkoa & Al-Saegh, 2010). Green creativity encompasses both physical and programmatic innovations related to green products or processes, encompassing areas like energy storage, pollution mitigation, waste recycling, the development of eco-friendly products, and organizational environmental management (Mahmoud et al., 2022). It serves as a vital component within organizations and is intricately linked to the organization's strategic objectives. This is due to its ability to generate novel, high-value contributions while simultaneously positively impacting the surrounding environment (Abbas & Al Hasnawi, 2021). In essence, creativity is associated with an individual's capacity to generate innovative ideas, leveraging their unique knowledge, skills, and experiences, all of which contribute to their qualifications and expertise.

“Green creativity” is the process of coming up with new ideas, products, services, systems, and processes that try to make people's lives better while using fewer natural resources. It stands out because it makes products, materials, and production processes that put the health of the environment and the future of the world first. The main goal is to help growth and renewal that are good for the environment. Green creativity is very important for coming up with technological solutions to climate change, which is one of the most important problems of the last few decades. Although this century has brought many problems and issues, it remains very important to address climate change and ensure the use of sustainable practices. Green creativity is a recent concept often described using similar, interchangeable terms, like environmental efficiency and environmental creativity (Yang et al., 2019; Abdelhadi & Fouad, 2020). It also aids in the realization of the aims of promoting economic growth and development as it is important that the natural resources should always be available to service the people environmentally. Moreover, it aids in cutting down the cost of production (Maitlo et al., 2022). Among numerous other advantages of green creativity is the fact that by creating ecologically friendly products, companies would be able to maximize their profits and make their competition grow. It also leads to environmental management since people will be adhering to environmental laws and regulations. The strategy provides you with excellent chance to meet the customer needs and yet you are limiting your impact on the environment. It enhances the efficiencies in the organization, optimizes resource and energy utilization, and allows the trimming of costs and increasing revenues (Al-Talibi & Hussein, 2018).

2.2.1. Dimensions of Green Creativity

Over the last decade, a number of academics have contributed to the emerging concept of green behavior research (Chen et al., 2015b). Rhodes' model of em-

employee green creativity consists of four elements, namely green creative motivation, green creative thinking, green creative behavior and green creative outcomes. This model aims to discover the core meaning of creativity and changes 4Ps model in its respects. All the above-mentioned symbols (green creative motivation, green creative thinking, green creative behavior, and green creative outcomes) represent unique aspects of the press, the person, process, and product. These four elements, motivation, thinking, behavior, and outcomes are all included in the common framework for understanding green creativity that emerges from a careful review of the literature. These four dimensions serve to differentiate various aspects of green creativity thematically. Importantly, since most of the aspects discussed in the literature can be aligned within these dimensions, this four-dimensional model offers a comprehensive approach to evaluating employees' green creativity. As a result, proposed metrics for assessing green creativity are rooted in this particular type of green creativity, guided by the framework of multiple dimensions, in accordance with the 4Ps model of creativity. The four-dimensional model of employee green creativity is illustrated in **Figure 1**.



Source: Author's Construct.

Figure 1. Four-dimensional model of green creativity.

Green Creative Motivation: The initial dimension pertains to inherent motivations driving the generation of original and practical concepts for green product development. Nurturing creative self-efficacy through these inherent motivations may effectively motivate employees to actively engage in the creation of green products (Prabhu, Sutton, & Sauser, 2018). In particular, the generation of creative ideas for green products stands to benefit significantly when individuals with high intrinsic motivations believe in their capacity to make a positive environmental impact. Furthermore, green creative motivation encourages employees to establish an “internal causality chain,” reinforcing their commitment to the outcomes of their creative endeavours throughout the green product development

process (Auger & Woodman, 2016). Additionally, empirical research has demonstrated that intrinsic motivation enhances cognitive flexibility, ultimately leading to an increase in creativity (Shalley, Zhou, & Oldham, 2016). In simpler terms, individuals who possess intrinsic motivation to create green products are more likely to generate innovative ideas compared to those lacking this intrinsic drive.

Green Creative Thinking: In addition to relying on their intrinsic motivation for green creativity, employees must also leverage their creative thinking abilities, encompassing cognitive style and flexibility. Merely possessing green creative motivation is inadequate. The second element, labelled “green creative thinking,” pertains to the cognitive capacities required to generate novel and practical ideas for green products. The foundation of creativity is personal creative thought, which underpins all aspects of the creative process, including problem-solving and solution execution (Loneragan et al., 2017). Employees need to be capable of thinking flexibly, comprehensively, and consistently about environmental concerns. Employees with creative cognitive types frequently seek out, integrate, and reframe challenges using information from various sources. Furthermore, individuals with cognitive flexibility demonstrate proficiency in capturing innovative concepts and expanding cognitive categories (Dreu, Nijstad, & Baas, 2020)

Green Creative Behaviour: Since developing green products is a constantly changing and intricate process, employees must participate in a range of endeavours, including acquiring fresh skills, engaging with peers, and sharing their knowledge. The ability to engage in activities for coming up with original and practical thoughts about green products is the third dimension, or “green creative behaviour.” To achieve a demanding creative objective, employees need to collaborate with colleagues, exchange knowledge and expertise, and gather information using diverse approaches (Sethi, Smith, & Park, 2001). The key to transforming innovative ideas into tangible green products lies in green creative behavior. Employees tasked with developing environmentally sustainable products must focus on enhancing both their existing skills and their ability to adapt through a range of creative activities (Paulus, 2020). These activities may involve learning, brainstorming through interactions, and drawing inspiration from frequent discussions, experimentation, and validation.

Green Creative Outcome: For employees in green enterprises, generating innovative outcomes, such as designing eco-friendly products and services, is undeniably paramount. The ability to achieve creative objectives by conceiving fresh and feasible ideas for green products constitutes the ultimate dimension, denoted as green creative outcome. In this context, we highlight the speed, quantity, quality, and value of the ideas that employees generate and implement for green product development (Hsu & Fan, 2016). Staff members must allocate significant resources, including time, manpower, materials, and finances, to sustain the process of developing green products. Additionally, they need to yield creative outcomes (Horwitz & Horwitz, 2017). Consequently, the present study underscores green creative outcome as a pivotal component of green creativity for employees, aligning with the

prevailing perspective in existing literature, notably from [Chen and Chang \(2013\)](#).

2.2.2. The Creative Process and Creative Problem-Solving (CPS)

According to Von Och, the creative process consists of five stages, and it is important to note that these stages are not necessarily sequential (as cited in [Groenewald, 2016](#)). These five stages include:

1) **Preparation:** This stage involves clarifying the problem at hand, gathering relevant data, and formulating creative questions related to the issue.

2) **Frustration:** In this stage, individuals may encounter frustration as the creative questions they've formulated do not immediately yield efficient solutions.

3) **Incubation:** During the incubation stage, individuals take a break from actively addressing the problem, allowing their subconscious mind to generate new insights.

4) **Illumination:** This is when people have a moment of clarity when they realize the answer to the problem. But this answer might need more work to become a truly new and useful idea.

5) **Verification:** In this stage, the chosen solution is confirmed, and it may be decided that no more work is needed to make it better.

It's important to know that these steps don't always happen in a straight line, and creativity doesn't always follow a strict order.

Alex Osborn and Sydney Parnes came up with the "creative problem-solving" (CPS) method to help people deal with certain problems ([Groenewald, 2016](#)). In this method, there are five (5) steps: figuring out what the problem is and what the goal is, gathering information, coming up with, evaluating and ranking ideas, and then making and carrying out a plan to fix the problem. You can also use a lot of creative methods in each of these five steps. For example, you could use the 5Ws/H method in step one if you're not sure what the problem is. In the second step, the bug list method can be used to find problems with things in the environment that need to be fixed. Step three could include brainstorming sessions, while step four could use the advantage-disadvantage method, the reverse brainstorming technique, or other similar methods.

By the findings of [Chen & Chang \(2013\)](#) and [Chen et al. \(2015b\)](#), the process of achieving green innovation and solving creative problems with a green focus requires the inclusion of specific key elements to ensure success. The collective entity, whether it be an organization or a team, must collectively embrace a green vision that has been instilled by green transformational leadership and is supported by the possession of green dynamic skills. Furthermore, individual members within this collective should possess green self-efficacy and demonstrate mindfulness about green principles. The procedures outlined in this section will be followed through collective green creativity to develop fresh, original, environmentally friendly, and sustainable company concepts.

2.3. Green Transformational Leadership and Green Creativity

Leaders embodying green transformation are prone to instilling a culture of crea-

tivity and innovation centred on sustainability. This is achieved by endorsing environmentally responsible behaviour and motivating followers to strive for ecological objectives. In turn, this culture stimulates green creativity in individuals and organizations. Green transformative leaders are imaginative, inspiring, and encouraging to their followers. Such leadership qualities inspire and drive people to think creatively about how to handle environmental issues. Furthermore, green transformational leaders generate a sense of shared purpose and collaboration among their followers, which may promote the sharing of ideas and the creation of new solutions. Prior studies have consistently shown a strong correlation between transformational leadership and employee creativity (Avolio et al., 2019; Gong et al., 2009; Shin & Zhou, 2003). Transformational leaders can stimulate and motivate their followers to excel in their performance and encourage innovative thinking (Jung et al., 2003; Sarros, Cooper, & Santora, 2008). Jung et al. (2003) also highlighted how transformational leadership aids followers in generating fresh ideas that contribute to organizational effectiveness. Wang et al. (2022) even noted that transformational leadership can lead to high levels of creativity among hotel staff. Additionally, transformational leaders create an atmosphere conducive to innovation, allowing their followers to generate creative concepts for the benefit of the organization (Keller, 2006; Zhang, Tsui, & Wang, 2011).

In our study, we employ the concept of green transformational leadership, a term defined by Bass (2015), Chen and Chang (2013), and Gardner and Avolio (2018) as “leadership behaviors that motivate followers to achieve environmental goals and inspire followers to surpass expected levels of environmental performance.” Chen and Chang (2013) specifically associated green transformational leadership with green creativity within the manufacturing sector. Given this background, we propose a hypothesis that green transformational leadership is linked to green creativity within the service industry.

Hypothesis 1. Green transformational leadership positively relates to green creativity.

2.4. Theoretical Review

The study is grounded in several theories that have been advanced to elucidate the connection between technological innovation and financial performance within the hospitality industry. These theories include the Componential Theory of Creativity and the Social Information Processing Theory.

2.4.1. Componential Theory of Creativity

Amabile (2017) suggests that individuals with average abilities can generate moderately creative work within a specific domain on occasion. Moreover, the social environment, which includes the workplace, can influence both the extent of creativity and the frequency of creative actions. This approach introduces three individual components: domain-specific competencies (comprising technical skills, knowledge, and expertise), processes related to creativity (including cognitive style, willingness to take risks, and unconventional thinking), and task motivation

(which encompasses passion and intrinsic motivation). The fourth aspect pertains to the working conditions experienced by employees. When someone with extensive knowledge and creative thinking works in a highly creative setting, creativity is at its maximum (Amabile, 2017). Therefore, it is hypothesized in this study that eco-friendly human resource practices and green strategies will act as external variables that encourage innovative thinking by creating a conducive workplace. Conversely, green transformational leadership would enhance employee knowledge, skills, and motivation, enabling them to put innovative ideas into practice. Researchers Song et al. (2021), Li et al. (2020), Jaiswal, & Dhar, (2015) & Tung, (2016) have also examined external elements that foster employees' creativity, for instance, aspects like green human resource management (GHRM), leadership, supportive management, and a culture of innovation.

2.4.2. Social Information Processing Theory

The association between environmentally conscious management initiatives and green transformational leadership is indicated by applying the social information processing theory. As per this study, implementing green management practices is expected to cultivate the development of green transformational leadership. The social information processing theory posits that an individual's conduct and beliefs are influenced by the social environment in which they are situated and operate (Salancik & Pfeffer, 2018). As a result, the management's emphasis on environmental protection combined with green human resource practices may encourage managers to demonstrate a green transformational leadership style. This aligns with the viewpoint expressed by Luu (2020), who offered empirical evidence in favour of the promotion of green leadership through workplace conditions and organisational policies.

3. Methodology

The researcher opted for a quantitative approach in conducting this research. Considering the research's quantitative orientation, the researcher embraced a social survey design which posed questions to individuals within the population to assess their self-reported opinions, behaviours, abilities, beliefs, or knowledge, as elucidated by Chmiliar (2012). The researcher's overarching objective was to conduct an examination involving a larger employee population, necessitating the researcher to opt for a sample selection. Thus, enhancing the ability of the researcher to sample quickly and economically (Chmiliar, 2012). In adopting this design, the researcher conducted a thorough examination of the research problem through sample selection. This approach allowed for an in-depth analysis rooted in a descriptive theory conveyed through robust questions and hypotheses (Tobin, 2012). In the current research, the subjects of investigation have involved two categories of people: 1) the managers or heads of different production units, and 2) the workers or employees who are in the various manufacturing industries. However, due to the large number of employees in the company and comprising the

study's population, there was a need for a sample to be chosen for the study under consideration (Bell & Bryman, 2016). To arrive at the sample, the study adopted the non-probability sampling technique, which was necessitated by the use of a quantitative research approach and design. Specifically, purposive sampling was employed, as it enabled the researcher to deliberately target managers and employees with direct experience of leadership and green creativity practices within manufacturing firms. This ensured that the respondents selected were relevant to the study objectives and capable of providing meaningful insights. Hence, the researcher used an estimated sample size of two hundred (200) respondents. Data for the research were collected from two primary sources: secondary data and primary data sources. Secondary data were obtained through an examination of relevant literature and documents sourced from various documentary outlets, encompassing both print and digital media such as books, publications, scholarly journals, maps, periodicals, magazines, and online resources. The primary data collection process involved a systematic approach, beginning with questionnaire design, followed by pre-testing, and concluding with questionnaire administration. Semi-structured questionnaires were employed, administered through face-to-face interviews, targeting both Managers or Production Unit Heads and employees within the manufacturing industry, in alignment with the research objectives.

Roberts et al. (2007) believed that face-to-face interviews and self-administered questionnaires are largely used in data collection procedures; the questionnaire was selected as the major mechanism in acquiring data from the identified respondents. Since they chose to use the questionnaire as the method of gathering raw data through which to conduct the study, the researcher used a self-administered questionnaire, whose questions are closed-ended. A standardised questionnaire was used to collect the information among the participants. The questionnaire comprised sections and questions that measured the variables of interest to test the constructs of interest with a five-point Likert-type (with Strongly Agree = 5 to Strongly Disagree = 1) scale. The items were borrowed from available scales in the use and adapted them to the specific context of green transformational leadership, and green creativity. Section A collected the demographic data that included age, gender, level of education, and tenure in the organisation. The mentioned criteria were considered essential in the process of understanding the characteristics of the participants and their possible effect on the research results. In section B, the participants were tested in terms of their perceptions of the green transformational leadership behaviours of their immediate supervisors. The items were retrieved based on the Multifactor Leadership Questionnaire (MLQ) to show the specific items in green leadership. Finally, the degree of green creativity of the participants was also evaluated in the Section C segment. The items were based on Multifactor Leadership Questionnaire (MLQ) Creativity subscale. The data on questionnaire which was filled by the respondents was analysed with the help of Statistical Package for Social Science version 20. The data was further summarised and presented in tables.

4. Data Presentation and Analysis

4.1. Respondents' Demographic Data

The distribution of respondents by demographic parameters, such as gender, age range, and years of service with the company, was one aspect of the data presentation and analysis process.

4.1.1. Gender of Respondent

The data provided in **Table 1** shows how respondents were distributed by sex. Three categories—Female, Male, and Total—with matching frequencies and percentages are included in the table. 87 respondents, or 43.5% of the sample, identified as female, and 113 respondents, or 56.5% of the sample, identified as male. The gender distribution in the table is slightly biased towards men, with women making up a sizable share of the sample. The percentages show that the two genders are pretty evenly represented in the population under study.

Table 1. Gender of respondents.

		Frequency	Percent
Valid	Female	87	43.5
	Male	113	56.5
	Total	200	100.0

Source: Field Survey, 2025.

4.1.2. Age of Respondents

Table 2 provides an overview of the age distribution among the respondents. The table includes four age categories: 21 - 30, 31 - 40, 41 - 50, and 51 - 60, with corresponding frequencies and percentages. The largest group of respondents falls within the 21 - 30 age bracket, comprising 39% of the total sample, followed by the 31 - 40 group at 35%. The 41 - 50 and 51 - 60 age groups represent 20.5% and 5.5% of the respondents, respectively. This distribution shows that most of the people who took the survey are fairly young, with a large number of them being between the ages of 21 and 40. The data also shows that the number of people who answered the survey goes down as they get older. The 51 - 60 age group had the fewest respondents.

Table 2. Age of respondents.

		Frequency	Percent
Valid	21 - 30	78	39.0
	31 - 40	70	35.0
	41 - 50	41	20.5
	51 - 60	11	5.5
	Total	200	100.0

Source: Field Survey, 2025.

4.1.3. Respondents' Marital Status

Table 3 shows how many people in the study were married. The survey found that 51% of the people who answered are married. The single category got 47.5% of the votes, which is the second most. Only 1.5% of the people who answered said they were no longer married. This distribution shows that most of the people who answered were either married or single. Only a small number were divorced. These results provide significant insights into the marital status of the study participants and may be crucial for analyzing various aspects of their responses or behaviors within the research framework.

Table 3. Marital status.

		Frequency	Percent
Valid	Divorced	3	1.5
	Married	102	51.0
	Single	95	47.5
	Total	200	100.0

Source: Field Survey, 2025.

4.1.4. Educational Attainment Level of Respondents

The data presented in **Table 4** illustrate the level of educational attainment among the sampled individuals or respondents. The table showcases four categories: 1st Degree, Diploma, HND (Higher National Diploma), and Master's. From the frequency distribution, it is evident that the majority of respondents hold a 1st Degree, constituting 51.5% of the sample. Both Diploma and HND (Higher National Diploma) levels each account for 19.5%, while respondents with a Master's degree make up 9.5% of the sample. The table demonstrates the distribution of educational qualifications in the given population, with a notable prevalence of individuals possessing a 1st Degree education level.

Table 4. Level of educational attainment.

		Frequency	Percent
Valid	1 st Degree	103	51.5
	Diploma	39	19.5
	HND	39	19.5
	Masters	19	9.5
	Total	200	100.0

Source: Field Survey, 2025.

4.1.5. Role of Respondent in the Company

Table 5 presents the roles held by respondents within the companies, categorizing them into Frontline Employee and Manager roles. The data reveals that a significant proportion of respondents (86.0%) are in frontline positions, indicating the

prevalence of non-managerial roles within the sample. Conversely, a smaller segment of respondents (14.0%) assumes managerial responsibilities. This distribution underscores the predominantly non-managerial nature of the roles within the surveyed population, with a notable distinction between frontline staff and managerial positions.

Table 5. Respondent's role in the company.

		Frequency	Percent
Valid	Frontline Employee	172	86.0
	Manager	28	14.0
	Total	200	100.0

Source: Field Survey, 2025.

4.1.6. Number of Years as an Employee

According to the data below (**Table 6**), the majority of respondents (37.0%) had been working for Less than 3 years. The group with 3-5 years of employment makes up a significant proportion (26.5%), closely followed by those with 6 - 8 years of employment (27.0%). 9.5% of respondents, who are significantly less, have worked for 9 years and above. This distribution illustrates the varying tenure lengths of employees within the sample, with the majority having relatively shorter durations of employment.

Table 6. Years as an employee in the company.

		Frequency	Percent
Valid	Less than 3 years	74	37.0
	3 - 5 years	53	26.5
	6 - 8 years	54	27.0
	9 years and above	19	9.5
	Total	200	100.0

Source: Field Survey, 2025.

4.2. Reliability Test

In **Table 7**, the reliability analysis for two variables, Green Transformational Leadership (GTL) and Green Creativity (GC), is presented. For GTL, consisting of 10 items, a high level of internal consistency is indicated with a Cronbach's Alpha value of 0.912, surpassing the commonly accepted threshold of 0.7. Similarly, the variable Green Creativity, comprising 6 items, also demonstrates strong internal consistency, as evidenced by a Cronbach's Alpha value of 0.906. These findings imply that the items within both variables reliably measure their respective constructs, suggesting that the scales utilized for assessing green transformational leadership and green creativity are robust and dependable for research or assess-

ment purposes.

Table 7. Reliability analysis for each variable.

Variable	Items	Cronbach's Alpha
Green Transformational Leadership	GTL 1	0.912
	GTL 2	
	GTL 3	
	GTL 4	
	GTL 5	
	GTL 6	
	GTL 7	
	GTL 8	
	GTL 9	
	GTL 10	
Green Creativity	GC 1	0.906
	GC 2	
	GC 3	
	GC 4	
	GC 5	
	GC 6	

Source: Field Survey, 2025.

4.3. Descriptive Statistics

4.3.1. Descriptive Statistics on Green Transformational Leadership

The variable workforce diversity report has ten (10) items. Field (2005) states that when a variable's mean score on a five-point Likert scale is 3.0 or higher, it is considered significant and widely accepted. As seen in **Table 8**, all of the workforce diversity constructs were accepted.

Table 8. Descriptive statistics of green transformational leadership.

Construct	N	Minimum	Maximum	Mean	Std. Deviation
GTL 1	200	1	5	3.46	1.25
GTL 2	200	1	5	3.46	1.19
GTL 3	200	1	5	3.50	1.18
GTL 4	200	1	5	3.70	1.20
GTL 5	200	1	5	3.62	1.21
GTL 6	200	1	5	3.65	1.24
GTL 7	200	1	5	3.70	1.18

Continued

GTL 8	200	1	5	3.23	1.31
GTL 9	200	1	5	3.43	1.22
GTL 10	200	1	5	3.61	1.16
Valid N	200				

Source: Field Survey, 2025.

The descriptive statistics in **Table 8** provide valuable insights into the perceptions of green transformational leadership within the sample of 200 respondents. Participants rated their leaders quite positively in terms of commitment to environmental sustainability (Mean = 3.46) and the ability to inspire the team with ecological plans (Mean = 3.46). Furthermore, leaders are seen as providing a clear ecological vision (Mean = 3.50) and guiding the team toward common environmental goals (Mean = 3.70). These results suggest that the leaders in this context are generally viewed as proactive and effective in promoting ecological consciousness within their teams. Moreover, respondents perceive their leaders as consistently encouraging environmentally friendly practices during product and service development. However, there is some room for improvement in terms of incorporating the latest technology with minimal environmental hazard (Mean = 3.23), which suggests a potential area for leadership development. These statistics highlight the importance of green transformational leadership in fostering a sustainable and eco-conscious organizational culture while also suggesting specific areas where leadership efforts can be enhanced.

4.3.2. Descriptive Statistics of Green Creativity

The data presented in **Table 9** sheds light on the extent of green creativity exhibited within the team context, as perceived by the 200 respondents. The descriptive statistics indicate that, on average, the team members are moderately engaged in generating new and innovative ideas to achieve environmental goals through their product and service offerings. Specifically, the team tends to consistently propose new green ideas to enhance environmental performance (Mean = 3.34) and actively promotes these ideas to others (Mean = 3.53). Moreover, the team is noted for their willingness to develop plans for implementing these innovative ideas (Mean = 3.55) and to rethink and refine these ideas over time (Mean = 3.71), indicating a dynamic and iterative approach to green innovation. However, there seems to be room for improvement in terms of finding creative solutions to environmental problems within the context of product and service innovation (Mean = 3.67). Overall, the statistics suggest that the team possesses a foundation of Green Creativity, demonstrating a propensity to generate novel ideas and approaches for environmental improvement, but there's potential for further fostering and enhancing their ability to address environmental challenges through innovative practices.

Table 9. Descriptive Statistics of green creativity.

Construct	N	Minimum	Maximum	Mean	Std. Deviation
GC 1	200	1	5	3.09	1.28
GC 2	200	1	5	3.34	1.24
GC 3	200	1	5	3.53	1.21
GC 4	200	1	5	3.55	1.16
GC 5	200	1	5	3.71	1.23
GC 6	200	1	5	3.67	1.26
Valid N (listwise)	200				

Source: Field Survey, 2025.

4.4. Correlation Analysis

Table 10. Correlation between green transformational leadership and green creativity.

		Green Transformational Leadership	Green Creativity
Green Transformational Leadership	Pearson Correlation	1	0.790**
	Sig. (2-tailed)		0.000
Green Creativity	Pearson Correlation	0.790**	1
	Sig. (2-tailed)	0.000	

**Correlation is significant at the 0.01 level (2-tailed). N = 200.

The results, as displayed in **Table 10**, reveal a highly significant positive correlation ($r = 0.790$, $p < 0.01$) between Green Transformational Leadership and Green Creativity within a sample of 200 respondents. This outcome implies that a meaningful and positive connection exists between leaders who exhibit strong green transformational leadership characteristics and the emergence of innovative and environmentally conscious ideas and behaviours within their teams. These results confirm the important contribution of leadership on the promotion of creative and environmentally-oriented organizational culture in that, leadership that matched within the sustainability objectives can serve as a viable way to promote creative input with the intention of environmental improvement.

4.5. Linear Regression Analysis

This paper uses a linear regression analysis in determining the green transformational leadership and green creativity. The preferred analytics approach is provided by linear regression because it is able to determine the linear relationship between one or multiple independent variables and a single dependent variable. The rationale for our employing this methodology is to test and measure the effects of green transformational leadership on green creativity. In the scope of how our study examines the relationship between green transformational leadership

and green creativity this analysis will help us to determine how significant the difference in green transformational leadership can give us an indication upon variation of green creativity. Hypotheses of the study are tested and the regression analysis is given.

Table 11. Model 1, the linear regression analysis result of green transformational leadership and green creativity.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.790 ^a	0.624	0.622	0.62507	0.624	329.074	1	198	0.000

a. Predictors: (Constant), Green Transformational Leadership; b. Dependent Variable, Green Creativity.

The Linear Regression Analysis Results presented in Model 1 (as shown in **Table 11**) reveal a strong and statistically significant relationship between Green Transformational Leadership and Green Creativity. The correlation coefficient (R) of 0.790 indicates a robust positive correlation, implying that higher levels of Green Transformational Leadership are associated with increased Green Creativity. The regression model explains 62.4% of the variance in Green Creativity (R Square = 0.624), demonstrating the substantial influence of Green Transformational Leadership on this dependent variable. The addition of Green Transformational Leadership as a predictor significantly enhances the model's fit, as evidenced by the highly significant F Change statistic (329.074, $p < 0.001$). Thus, hypothesis 1 is accepted, suggesting a substantial positive relationship between green transformational leadership and green creativity. These findings underscore the importance of Green Transformational Leadership in fostering a creative and environmentally conscious culture, highlighting its positive impact on Green Creativity within the context of the study.

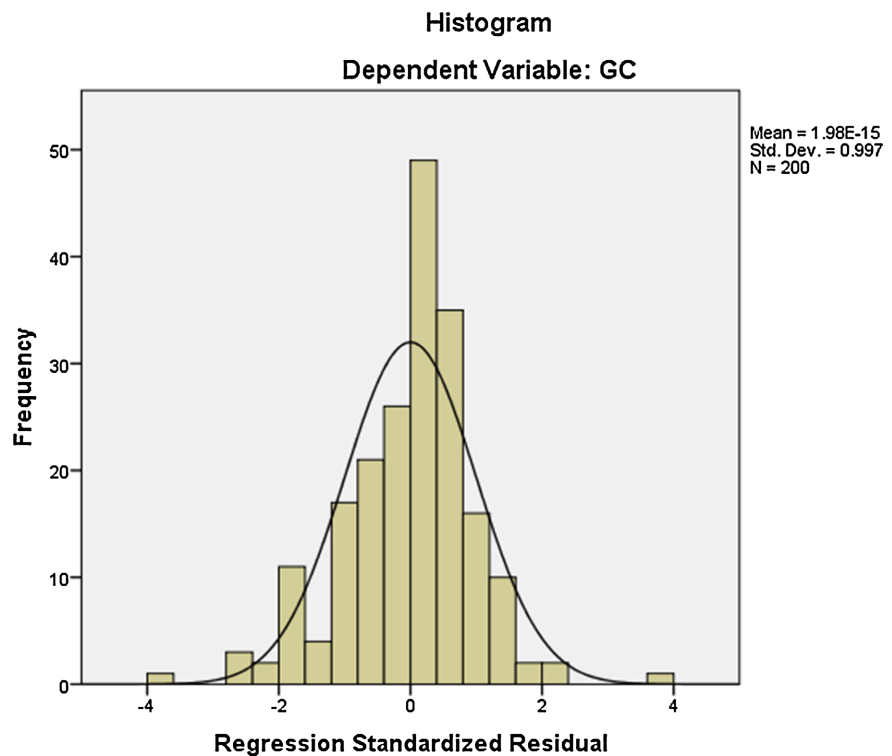
Table 12. Coefficients^a.

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients Beta	T	Sig.	Collinearity Statistics	
		B	Std. Error				Tolerance	VIF
1	(Constant)	0.515	0.169		3.038	0.003		
	GTL	0.839	0.046	.790	18.140	0.000	1.000	1.000

^aDependent Variable: GC.

The coefficients table (see **Table 12**) shows the relationship between Green Transformational Leadership (GTL) and Green Creativity (GC) as a dependent variable. The coefficient (B = 0.839, SE = 0.046) of GTL is not standardized and therefore, it indicates that when GTL increases by 1 unit, another variable (GC)

increases by 0.84 points held constant. The standardized beta value ($b = 0.790$) shows that the environmental consciousness of transformational leadership behaviours on GC is positive and significant, which means that the environmental consciousness of transformational leadership behaviours has a positive and significant effect on the green creativity of employees. The presence of a t-value of 18.140, as well as $p = 0.001$, is an indication that the relationship between the two is not a mere coincidence. The constant ($B = 0.515$, $p = 0.003$) indicates the level of GC at the no leadership and states the fact that there is a certain level of creativity among the workforce, though there is no leadership. The collinearity statistics also show tolerance as 1.000 and VIF as 1.000, which once again demonstrates that there are no multicollinearity concerns with the model. Taken together, these results imply the prowess of the regression model and show that the concept of green transformational leadership is a valid predictor of green creativity in the study environment.



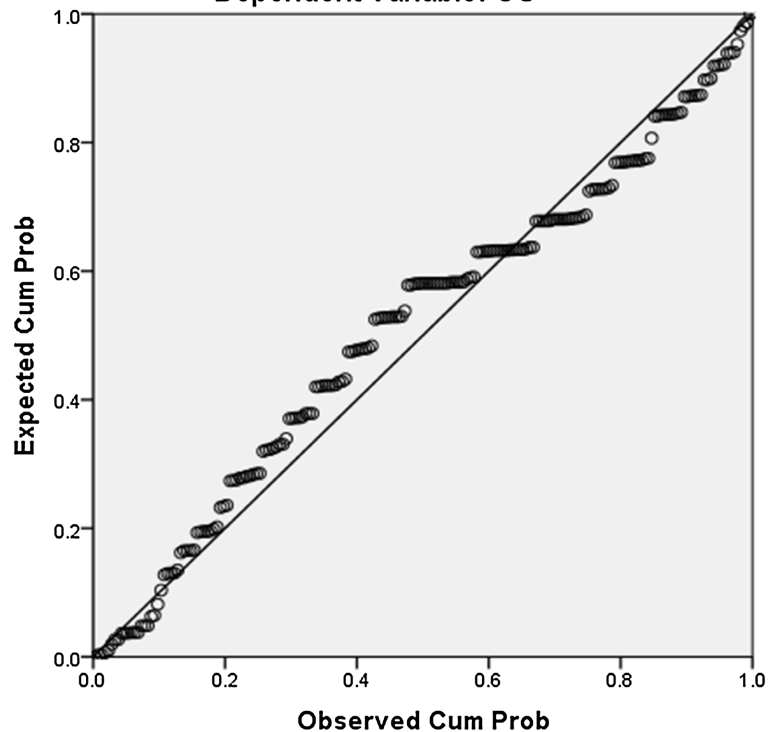
Source: Field Survey, 2025.

Figure 2. Histogram for regression standard residual.

The normality assumption is rather plausible based on the histogram of the standardized residuals of the dependent variable, Green Creativity (GC). It is focused on zero, where the mean is nearly zero ($1.98E-15$) and standard deviation is nearly 0.997, which is nearly equal to 1, which is the expected value of a standardized residual. The shape of the histogram is more or less bell-shaped, in which all the residuals are concentrated at the centre and there are fewer residuals at the extremes. Then almost the whole form is enveloped by the superimposed normal

curve, which also fits well with the bars. Although the two tails have a few extreme values (-4 and $+4$), they are small in number and would not therefore skew the other parts of the distribution. A sample size of 200 is sufficient, and minor inflections of the perfect normality would not be an issue. The regression model returns appear to be normally distributed in general, and this confirms the results of the regression model (Figure 2).

**Normal P-P Plot of Regression Standardized Residual
Dependent Variable: GC**



Source: Field Survey, 2025.

Figure 3. Normal P-P plot of regression standardized residual.

The regression standardized residual values of the dependent variable (GC) plotted in the normal P-P Plot indicate that the values are very near the diagonal line. It implies that the residual values are approximately normally distributed. This correspondence shows that the regression analysis assumption of errors being normally distributed is sufficiently met because there are no significant deviations or systematic outliers from the line. The changes at the lower and upper ends are a bit, but the general trend shows the correctness of the regression model. This indicates that the analysis findings are accurate and not greatly influenced by non-normal residues (Figure 3).

5. Discussions

The demographic data provided an insightful backdrop, revealing the profile of the study participants, which can be vital for interpreting the subsequent results.

The reliability testing, demonstrating high internal consistency for both green transformational leadership and green creativity scales, establishes a strong foundation for the validity of the measurement instruments employed in the study. The descriptive statistics provided a detailed picture of how leaders and their followers saw their roles in promoting environmental awareness and new ideas. People know that leaders are dedicated to sustainability and can motivate their teams, but they could do a better job of using the most up-to-date eco-friendly technology. The followers, on the other hand, show a good tendency to come up with and promote green ideas. However, they can be more creative when it comes to solving environmental problems. These figures gave useful information that showed the aspects where organizations can focus their efforts to improve green leadership and creativity.

Green transformational leadership and green creativity were found statistically to have a positive, strong and significant relationship as shown by the correlation test. Evidence from the study supported the idea that leaders who exhibit green transformational leadership qualities foster an environment that is conducive to the growth of innovative and eco-friendly ideas. These findings illustrate the significance of leadership in fostering a culture of innovation and sustainability within organizations. The linear regression analysis conducted in this study illustrates the significant impact of this leadership style on fostering employees' green creativity, thereby confirming a robust correlation between green transformational leadership and green creativity. The model explained 62.4% of the differences in green creativity. The results depicted a significant result by aligning sustainable objectives with leadership qualities. Avolio et al., (2003), Bass & Riggio (2006) support the idea that transformational leaders inspire and push their followers to do their best and come up with new ideas. This showed that workers are open to new ideas. The concept of green transformational leadership has gained importance, particularly concerning environmental sustainability.

Hahn & Lülfs (2014) urged managers to not only improve job performance but also to motivate active support for sustainability goals. Green transformational leaders motivate teams to generate innovative concepts for environmentally sustainable practices, thus aligning leadership with ecological principles. This connection between leadership and sustainability also includes how committed employees are to sustainability projects. Walumbwa et al. (2011) showed that sustainable leadership, which includes traits of transformational leadership, has a positive effect on how employees think and act. Leaders who practice sustainability are likely to involve employees in sustainability projects, which gives them a sense of shared purpose and commitment to environmental goals. Such involvement tends to create new and long-lasting solutions. The beta coefficient showed a positive relationship that as green transformational leadership goes up, so does green creativity. These results are very relevant to organizations that want to improve their sustainability efforts. It showed how important for environmentally

friendly leaders to develop and invest in green transformational leadership to come up with new, eco-friendly ideas.

These results can be enhanced by the Componential Theory of Creativity. [Amabile \(2017\)](#) assumes that the work environment affects the development of three categories of skills: domain-specific, processes related to creativity, and intrinsic motivation, which combine to form creativity. The research results of this paper showed that green transformational leaders enhance the skills and motivation of the employees by intellectually stimulating, giving them personal attention, and encouraging them with inspiration. This way, leaders foster an enabling environment that makes the creative potential of employees emerge. This theoretical framework is directly linked to the strong predictive effect of leadership on creativity found in the regression study ($b = 0.790$, $p = 0.001$). A supplementary explanation is also provided by the Social Information Processing Theory. [Salancik and Pfeffer \(2018\)](#) argue that social cues at the workplace control the beliefs and behaviors of employees. One of the primary sources of such cues is the leaders, as they demonstrate which kinds of behaviors are rewarded and accepted. In the manufacturing companies of Ghana, a leader with environmental goals and models that embody sustainable practices sends a clear social message, which motivates employees to engage in environmentally friendly innovation. The above positive relationship between leadership and creativity observed in this research has shown that leadership is a motivational source (Componential Theory) and a social indicator (Social Information Processing Theory) that affects the behavior of employees.

The implications of the present study can be classified as theoretical implications since the findings support the thesis statement that leadership cannot be viewed as a social process of influence alone, but as one of the main contributors that can be employed to assess whether organizations can create sustainability-related innovation to the environment or not. The study addresses the literature on the theory of transformational leadership, the literature on creativity and the literature on sustainability by empirically confirming a positive and significant association between the constructs of green transformational leadership and green creativity. In its direct connection of the results with the Componential Theory of Creativity and the Social Information Processing Theory, this research proves that the green transformational leadership is able not only to improve the skills and motivation of the employees but also to give them the social context in which creativity becomes possible. The results from the study depicted how leadership and creativity are closely linked about sustainability. Leaders who care about the environment and get their teams excited about working toward green goals can really help the company come up with new ideas. These results give organizations useful information they can use to improve their sustainability efforts and create a culture of innovation and environmental responsibility. Organizations that intend to be prepared to cope with future challenges and opportunities should apply green transformational leadership in their operations because the world has turned out

to be more conscious of sustainability.

6. Recommendations

The findings of the study mainly lay the decision that organizations should spend a lot of resources in developing leaders who possess green transformational leadership qualities. Such leaders must have a strong desire to conserve the environment, give the employees a proper green vision, and urge them towards the use of environmentally friendly tools and approaches. Investments made on leadership development programs on these traits can go a long way in that such leaders will make the workplace the place where green creativity is not inhibited.

To motivate employees to attain their sustainability objectives, organizations that are interested in promoting green creativity must initiate leadership training programs immediately (such as green leadership bootcamps) so that managers can be taught how to coach, vision and motivate employees. Organisations must also incorporate green targets into their performance measurement or appraisal, and reward systems to establish an accountability mechanism and a system of measurement of performance. To get the employees working and problem-solving, companies should conduct monthly brainstorming of green ideas at the team level; they should also form cross-functional innovation teams. In the implementations of ideas, companies must reserve a small pilot fund to trial potentially good projects and develop recognition programs (such as awards, bonuses, or career incentives) to publicly recognise employees as a reward to them. The organisation's green HR activities should become a lasting business by introducing sustainability principles in their hiring, training and promotions. They must also invest in equipment and infrastructure that will simplify the attempt to experiment. Lastly, dashboards can help managers monitor such results as the generation of ideas, implementation rates, cost reduction and impact on the environment. They must also consistently share success stories to promote a green-innovation culture.

7. Avenues for Further Research

The research or study revealed that there is a positive and a strong association between green transformational leadership and green creativity. Nevertheless, some of them must be given more attention. It would be an excellent subject of future research to examine the long-term results of green transformational leadership in sustainability terms. How can leaders ultimately be of better service to businesses out of developing these leadership skills? Future studies on different cultural backgrounds are needed to determine how culture can affect the interplay between green transformational leadership and green creativity. This will assist us to know more of how the connections operate. Such research on how green transformational leadership is practiced in different cultures can produce important data regarding the adaptability and effectiveness of this type of leadership in fostering green creativity in different industries and of different organizational size,

and can possibly suggest best practices specific to individual sectors. Research may be undertaken to identify a certain issue and solution that can be used to complement what had and is already known.

8. Conclusion

Since companies in every corner of the globe are struggling with environmental issues, it becomes evident that executives should attach utmost importance to green inventiveness. The most sustainable future can be one that organizations foster through investing in environment-friendly leadership development and implementation of an eco-conscious organizational culture. They are able to come up with solutions to complicated environmental problems as well. This research was mainly aimed at investigating the correlation between green transformational leadership and green innovation in the manufacturing industry. The purpose of the study was to determine how leadership behaviors that are focused on environmental issues and their ability to encourage employees to pursue sustainable goals contribute to the development of innovative and environmentally-conscious behaviors towards internal organizational transformation. The methodology employed to accomplish this purpose in the research is quantitative. Questionnaires and surveys were also distributed to workers in various industrial sectors in order to obtain quantitative data. In these surveys, the participants have been asked about their views towards various styles of leadership, preservation issues regarding the environment and creativity. The findings of the study show that green transformational leadership and green innovation have a healthy and strong correlation in the industrial industry. Environment-friendly leaders inspire their employees to achieve sustainable objectives, and thus innovation within the firm is enhanced. This depicts how green transformational leadership is crucial in bringing a shift towards a sustainable effort and motivating people to take part in sustainable actions.

Availability of Data and Materials

Upon reasonable request, the corresponding author will provide the datasets used and analyzed in this work.

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Author's Contribution

Kingsley Owusu: writing of the original draft, analysis and interpretation of data, review and editing.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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