

**CAPITAL UNIVERSITY OF SCIENCE AND
TECHNOLOGY, ISLAMABAD**



**Impact of Green Transformational Leadership on
Team Green Project Performance with the
Mediating Role of Team Green Creativity and
Moderating Role of Team Green Innovative
Climate**

by

Aqsa Rasheed

A thesis submitted in partial fulfillment for the
degree of Master of Science

in the

**Faculty of Management & Social Sciences
Department of Management Sciences**

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I dedicate my dissertation work to my supervisor, family and many friends. A special feeling of gratitude to my loving parents whose words of encouragement and push for tenacity ring in my ears.



CERTIFICATE OF APPROVAL

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Green Project Performance with the Mediating Role of
Team Green Creativity and Moderating Role of Team
Green Innovative Climate**

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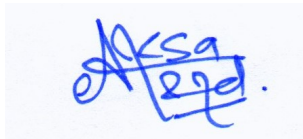
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(Aqsa Rasheed)

Abstract

The major goal of this study was to investigate the Impact of Green Transformational Leadership on Team Green Project performance, with the Mediating role of Team Green Creativity and Moderating Role of Team Green Innovative climate as a moderating component. Using a quantitative research technique, 385 project team members from IT organizations provided data for this analysis. The questionnaire survey approach was used, and responses were acquired from IT firms. Andrew was used to analyze the data Process Macro version 4.0 in SPSS by F. Hayes, incorporating descriptive statistics, correlation, mediation, and moderation tests. According to the findings of the study, project team resilience strongly mediated the association between team building and Green project performance, although Team Green Innovative climate was shown to be inconsequential as a moderator. This paper adds to the current literature by establishing links between variables using the theory of creativity. Furthermore, the study shows a positive link between Green transformational Leadership and Team Green Project Performance, as well as a good relationship with Team Green Creativity and Team Green Project Performance, which is consistent with the findings of the literature review. The study recognizes several limitations and advises that future research should pursue time-lag studies with bigger sample numbers for a more complete understanding.

Keywords: Green Transformational Leadership, Team Green Project Performance, Team Green Creativity, Team Green Innovative Climate

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Abbreviations

GTL	Green Transformational Leadership
GTIC	Team Green Innovative Climate
LGB	Leader Green Behavior
TGC	Team Green Creativity
TGPP	Team Green Project Performance
TOC	Theory Of Creativity

Chapter 1

Introduction

1.1 Background

Green leadership involves fostering environmentally friendly behaviors in a collaborative and supportive workplace. It is among the strategies organizations adopt to achieve sustainable goals and improve environmental performance. Leaders play a pivotal role by embodying values in their behavior, and leading by example allows them to transmit these values to their followers a mechanism supported by (Javaid et al., 2023). In workplace settings, leaders often serve as sources of information regarding appropriate behaviors, as noted by (Baruch and Cohen, 2007). Similarly, green leadership can influence followers to adopt sustainable behaviors. By emphasizing environmental stewardship, green leadership inspires activities like green process and product innovation (Gotsi et al., 2010), enhanced environmental performance (Gareeva et al., 2018), and improved green employee performance (Luu, 2019).

Recent studies, such as (Jnaneswar and Ranjit, 2020), have highlighted the role of leadership in generating green outcomes, particularly through green transformational leadership (GTL). Transformational leaders employ inspirational motivation and intellectual stimulation, which are crucial for fostering organizational innovation. These leaders encourage their teams to conceptualize problems from new perspectives, leading to creative solutions and breakthrough ideas. The literature

consistently demonstrates that transformational leadership positively impacts organizational innovation by championing new concepts and promoting innovative processes (Bono and Judge, 2003). When transformational leaders hold green values, their influence on subordinates' environmentally friendly behaviors becomes evident. For instance, (Robertson and Barling, 2013) argue that such leaders can inspire employees to overcome challenges by prioritizing organizational environmental benefits and solving sustainability-related issues innovatively. By modeling pro-environmental decisions and actions, green transformational leaders become role models, embedding green values in their teams.

(Chen and Chang, 2013) define GTL as the actions leaders take to motivate subordinates to meet environmental protection requirements and exceed performance expectations. The success of product development often hinges on creating offerings that satisfy stakeholders' needs while addressing environmental concerns. Product stewardship encompasses analyzing product life cycles to mitigate their environmental impact. Environmental issues like pollution and global warming have prompted companies to focus on green product development, which can be a significant competitive advantage (Chen et al., 2011). Consumers' growing environmental awareness has fueled demand for green products, with many willing to pay a premium for such offerings (Bhat, 1993); (Ginsberg and Bloom, 2004). The rise of consumer environmentalism underscores the need for organizations to integrate environmental management into product development (Pujari et al., 2003). Creativity, defined as generating novel and valuable ideas, is a cornerstone of innovation (Amabile et al., 1996). Within organizations, creativity precedes innovation by providing the raw material for developing commercially viable products, services, and practices (Wyer et al., 2010). Organizational dynamic capabilities have been shown to positively influence creativity (Andriopoulos, 2001).

To elaborate on this idea, green creativity is the creation of novel and practical concepts pertaining to green practices, services, processes, or goods (Amabile et al., 1988). Innovation and sustainable production depend on this kind of creativity (Li et al., 2020). Green passion (Jia et al., 2018), green organizational identity (Mittal and Dhar, 2016), and green intrinsic and extrinsic motivations (Li et al., 2020) are some of the factors that impact green creativity. Another

important consideration is the "green innovative climate" (GIC), which refers to how employees view a workplace that supports taking risks for green projects and offers challenges and resources that foster green creativity and innovation (Scott and Bruce, 1994). Research has demonstrated that GTL fosters green creativity by creating supportive climates, providing resources, and recognizing employees' innovative contributions (Amabile and Pratt, 2016); (Jaiswal and Dhar, 2015). Leaders' support is instrumental in motivating personnel to generate novel ideas and achieve organizational innovation goals.

1.2 Research Gap

Green transformational leadership and green creativity are examined in (Srivastava et al., 2024), with mindfulness and green organizational culture acting as mediators. However, the study does not address the project's outcome or green performance. The relationship between green transformational leadership and the mediating role of green innovative climate is examined in (Maitlo et al., 2022). However, the study does not examine the relationship between green transformational leadership and team green project performance and the mediating role of team green creativity. The study, which was applied to the RD and production department, was also carried out in China.

Although (Li et al., 2020) and (Mukonza and Swarts, 2019) have explored various facets of green transformational leadership and team creativity, there is a lack of a comprehensive analysis of how these components interact with respect to the success of green projects. With an emphasis on the moderating function of team innovative atmosphere and the mediating role of team green innovation, this study requires further research on the effects of green transformational leadership on team green project performance. The study does not examine the relationship between green transformational leadership and team green project performance and the mediating role of team green creativity. The effects of leadership styles on team performance and creativity in sustainability contexts have been extensively studied in the past, but little is known about the specific implications of green transformational leadership on team dynamics and project outcomes.

1.3 Problem Statement

Organizations around the world are increasingly emphasizing environmental responsibility and sustainability, leading to the adoption of green practices within their operations and projects. In this context, leadership plays a pivotal role, especially Green Transformational Leadership (GTL), which is believed to inspire teams to adopt eco-friendly behaviors and achieve better outcomes in green projects. However, there is limited research on how GTL directly enhances Team Green Project Performance. Specifically, there is a lack of understanding about how Team Green Creativity the ability to generate innovative, sustainable ideas acts as a mediator between leadership and project success. Additionally, the role of a Team Green Innovative Climate an environment that fosters and encourages creativity has not been fully explored as a factor that could strengthen this relationship.

This study aims to address these research gaps by examining how Team Green Creativity mediates, and Team Green Innovative Climate moderates, the relationship between Green Transformational Leadership and Team Green Project Performance.

1.4 Research Questions

To investigate the impact of Green Transformational Leadership on Team Green Project performance with the Mediating role of Team Green Creativity and Moderating Role of Team Green Innovative climate, let's Consider the following research questions:

Q1:What is the relationship between Green transformational leadership and Team green project performance?

Q2:What is the relationship between Green transformational leadership and Team green creativity?

Q3:What is the relationship between Team green creativity and Team green project performance?

Q4: Does Team green creativity mediate the relationship between Green transformational leadership and Team green project performance?

Q5: Does Team green innovative climate moderate the relationship between Green transformational leadership and Team green creativity?

1.5 Research Objectives

The study Aims to examine the variables (Green transformational leadership, Team green creativity, Team green project performance, Team green innovative climate) and to find the relationship among variables

Objective 1: To examine the relationship between Green transformational leadership and Team green project performance.

Objective 2: To examine the relationship between Green transformational leadership and Team green creativity.

Objective 3: To examine the relationship between Team green creativity and Team green project performance.

Objective 4: To examine the mediating effect of Green transformational leadership and Team green project performance.

Objective 5: To examine the moderating effect of Organization leadership on the relationship between Green transformational leadership and Team green creativity.

1.6 Significance of the Study

This study aims to enrich understanding in the Information Technology (IT) sector, where the need for rapid innovation and sustainability is becoming increasingly important. It provides valuable insights into how Green Transformational Leadership (GTL) can facilitate the success of green IT projects. As IT organizations seek to minimize their environmental impact through green technologies and practices, comprehending the role of leadership in promoting sustainable innovation is

crucial.

For IT companies, the research emphasizes the significance of Team Green Creativity (TGC) the capability of teams to develop eco-friendly, innovative solutions in enhancing project performance. This is especially relevant in creating energy-efficient systems, green data centers, and sustainable software applications. By illustrating how leadership affects creativity and project outcomes, the study offers IT managers strategies to guide their teams toward more sustainable technological innovations.

Moreover, the research highlights the importance of a Team Green Innovative Climate (TGIC) an environment that nurtures green ideas underscoring the need to cultivate a workplace culture that encourages experimentation and eco-friendly solutions. This is vital for IT firms aiming to remain competitive while aligning with global sustainability initiatives. By examining these leadership dynamics, the study contributes to both the academic framework and practical implementation of green leadership in IT, helping organizations refine their leadership strategies to achieve sustainability objectives and improve project results in green technology development.

1.7 Supporting Theory

Alots of opinions and viewpoints have been gathered provided by various researchers to assist with the investigations of Green transformational leadership, Team green project performance, Team green innovative climate, Team green creativity that are used worldwide in an organization however all the study's variables are included here in like Theory of creativity.

1.7.1 Theory of Creativity

The current study is grounded in the Theory of Creativity, which emphasizes that the social or work environment can significantly influence individuals' creative abilities ([Amabile and Pratt, 2016](#)). According to this theory, transformational leaders can foster an innovative environment that enhances creativity among team

members. Research has consistently shown that effective leadership is crucial for cultivating creative potential and demonstrates how transformational leadership fosters group creativity. Within this context, the concept of Green Transformational Leadership (GTL) is presented, which refers to leaders who encourage and inspire their groups to surpass sustainability targets and accomplish environmental goals.

The study also highlights the significance of the Green Team Innovation Climate (GTIC), which allows team members to explore green solutions with creativity and autonomy. This climate plays a pivotal role in promoting innovative approaches to address environmental issues, enabling teams to actively engage in sustainable practices.

It is well known that transformational leaders create creative environments that foster the growth of creativity (Berson et al., 2006). Group creativity is strongly affected by transformational leadership, according to existing research (Elkins and Keller, 2003); According to (Coad and Berry, 1998) and (Gardner and Avolio, 1998), Leaders who practice green transformational leadership are distinguished by their actions that motivate followers to exceed performance expectations and meet and surpass environmental goals.

Organizational climates can enhance employees' creative behaviors even when individuals are already motivated and possess the necessary skills (Li et al., 2020). This research aims to define GTIC as an environment that encourages green creativity and innovation by providing team members with the resources and freedom to develop green solutions. Building on creativity theory, GTIC is proposed as a mechanism that directs efforts toward green innovation (Scott and Bruce, 1994); (Amabile and Pratt, 2016). GTIC recognizes and rewards employees' green contributions while ensuring they have the tools needed for team green creativity (Jaiswal and Dhar, 2015).

Despite substantial research, Green psychological climate, green self-efficacy, and green dynamic capabilities have been the main subjects of the previous research. (Joshi et al., 2020) Contributions to the TGC literature remain limited . By investigating how team green creativity mediates the relationship between green

transformational leadership and team green project performance, this study aims to increase the body of knowledge on GTIC.

Chapter 2

Literature Review

2.1 Green Transformational Leadership

(Chen and Chang, 2013) describe green transformational leadership as a leader's ability to inspire their colleagues to achieve environmental objectives and encourage them to perform beyond standard environmental expectations. Green performance, on the other hand, refers to the performance of software and hardware integrated into innovative processes. This includes green initiatives such as pollution prevention, energy conservation, waste recycling, and sustainable environmental management (Aryee and Chen, 2006).

According to (Hay, 2006), transformational leaders stimulate new ideas and energize their followers toward change. Previous research has consistently demonstrated that transformational leadership positively influences organizational innovation (Chen et al., 2014).

Transformational leadership contributes significantly to the development of new ideas within innovation processes by addressing challenges with novel approaches. Such leaders act as catalysts, motivating their teams to explore creative solutions (Keller, 1992). As further noted by (Keller, 1992), transformational leadership behavior drives followers to envision innovative possibilities. This leadership style plays a pivotal role in fostering team creativity by encouraging members to tackle problems from diverse perspectives (Elkins and Keller, 2003).

Additionally, (Ehrlich et al., 1990) observed that transformational leadership promotes a vision and motivates followers to analyze problems innovatively. This leadership approach has been shown to positively impact innovative performance (Chen et al., 2014).

2.2 Green Transformational Leadership and Team Green Project Performance

Although transformational leadership is linked to improved company success, the processes behind this association are still being studied and are of interest (Para-González et al., 2018). This curiosity becomes especially pertinent when businesses need to innovate their products and processes in order to gain a competitive edge and perform better. Green transformational leadership (GTFL) is defined in this study as a leadership approach that seeks to provide employees in order to accomplish the organization's environmental objectives, with a clear vision, inspiration, and motivation while attending to their developmental needs (Mittal and Dhar, 2016).

GTFL encourages staff members to learn new things (Al-Hosam et al., 2016) and take an active part in product development and green innovation processes. Through this engagement, businesses can improve their environmental performance and launch eco-friendly goods and services (Gotsi et al., 2010). Previous research has referred to additional investigation into the mediating elements between innovation and transformational leadership (Berraies and Zine El Abidine, 2019), as well as between firm performance and HRM practices (Para-González et al., 2018). Leadership is seen as an essential organizational resource for environmental management, as per the Resource-Based View (RBV) (Zhou et al., 2018). GTFL encourages staff members to learn new things (Al-Hosam et al., 2016) and take an active part in product development and green innovation processes. Through this engagement, businesses can improve their environmental

performance and launch eco-friendly goods and services (Gotsi et al., 2010). Previous research has referred to additional investigation into the mediating elements between innovation and transformational leadership (Berraies and Zine El Abidine, 2019), as well as between firm performance and HRM practices (Para-González et al., 2018). Leadership is seen as an essential organizational resource for environmental management, as per the Resource-Based View (RBV) (Zhou et al., 2018).

Among several leadership styles, transformational leadership influences corporate innovation and performance by inspiring, motivating, and promoting trust and alignment with the leader's vision (Niranjan and Thakur, 2017). It has been demonstrated that GTFL is essential for improving company performance (Niranjan and Thakur, 2017) by encouraging productivity on an organizational, team, and individual level. Innovativeness, extra-role engagement, and in-role task efficacy are among the behaviors it promotes (Chen and Chang, 2013). Previous study emphasizes the importance of environmental management in light of growing stakeholder demand on firms to prioritize it (Liu, 2018).

Research by (Stevens et al., 2021) demonstrates that GTFL positively impacts green work engagement, which subsequently enhances environmental performance. Furthermore, GTFL promotes team green creativity, ultimately improving environmental outcomes. Based on these insights, the following hypothesis was developed to guide this study.

H1: Green Transformational Leadership will have significant impact on Team Green project performance.

2.3 Green Transformational Leadership and Team Green Creativity

Since leaders are essential to enhancing environmental performance (Andriopoulos, 2001), their qualities significantly affect the inventiveness of organizations

(Halbesleben et al., 2003). Many studies demonstrate how transformational leadership is essential for fostering innovative results (Kim et al., 2015).

Four essential components make up transformational leadership: intellectual stimulation, personalized attention, charisma, and inspirational motivation (Bass and Bass Bernard, 1985). Followers are inspired by transformative leaders' charisma, which cultivates loyalty and respect. Because of their charismatic effect, leaders are able to create in their subordinates a sense of collective responsibility. Transformational leaders are able to foster a sense of community and shared concern among their followers by providing individualized consideration.

By means of motivational inspiration (Mittal and Dhar, 2016), transformational leaders give their followers direction on how to accomplish a compelling organizational vision. Moreover, intellectual stimulation improves cognitive function. Followers' cognitive capacities are further improved by intellectual stimulation, which also inspires them to think creatively and offer original ideas (Gong et al., 2009).

Transformational leaders actively encourage their followers to take initiative and think creatively (Mittal and Dhar, 2015). Employee creativity and transformative leadership are strongly correlated, according to numerous studies (Gong et al., 2009). These leaders encourage their teams to think creatively and help them reach greater performance levels (Sarros et al., 2008).

According to (Jung et al., 2003), transformational leadership makes it easier to come up with fresh concepts that improve organizational performance. Similarly, transformational leadership encourages innovation in the hotel sector, according to (Wang et al., 2014). Transformational leaders enable followers to create new solutions for their organizations by fostering an innovative environment (Zhang et al., 2011).

This study adopts the definition of "green transformational leadership," as given by (Carless, 1998), (Chen and Chang, 2013), and (Gardner and Avolio, 1998). It comprises leadership practices that encourage teams to surpass environmental performance standards and accomplish environmental goals. According to (Chen and Chang, 2013), In the IT industry, green innovation and green transformational

leadership are closely related. Based on this information, we hypothesize that green transformational leadership positively affects team green creativity.

Green creativity involves generating environmentally friendly products and processes through innovative business strategies. These strategies may include adopting eco-friendly designs, reducing emissions, optimizing material usage, utilizing sustainable raw materials, and minimizing water and energy consumption (Albort-Morant et al., 2016).

H2: Green Transformational Leadership will have significant impact on Team Green Creativity.

2.4 Team Green Creativity and Team Green Project Performance

An organization's efforts to surpass cultural norms about the environment while abiding by environmental laws and regulations are reflected in its environmental performance (Mui and Chan, 2005). According to legal criteria, it encompasses the environmental effects of an organization's operations, outputs, and resource use (Kumar et al., 2015). The caliber of environmentally friendly goods, innovative green processes and products, and the integration of sustainability into corporate operations and product creation are some of the elements that have been shown to have an impact on environmental performance (Gamira, 2019).

Green innovation has been demonstrated to improve environmental performance and is regarded as a fundamental element of an organization's environmental management strategy (Adegbile et al., 2017). Furthermore, by cutting waste and operational costs, In addition to reducing the negative environmental effects of business operations, developments in green products and processes can improve financial and social performance costs. (Weng et al., 2015).

Green creativity, according to studies, should be viewed as an organizational endeavor that takes initiative rather than a reaction to pressure from stakeholders. The goal of these proactive measures is to gain a competitive advantage and improve environmental performance.(Kratzer et al., 2017). According to the

Resource-Based View (RBV) paradigm, innovations in green products and processes are seen as essential organizational assets that improve environmental performance and foster goodwill among stakeholders.

Furthermore, green process and product innovations contribute to better environmental outcomes while simultaneously supporting organizational social and financial performance by lowering costs associated with waste (Yu et al., 2021). These innovations are essential tools for organizations striving to improve environmental performance and foster positive relationships with stakeholders.

Based on this understanding, we hypothesize that Team green project performance is positively impacted by team green creativeness.

H3: Team Green Creativity will have significant impact on Team Green Project Performance.

2.5 Team Green Creativity Mediate the Relationship between Green Transformational Leadership and Team Green Project Performance

A key factor in encouraging organizational innovation is having leaders with the right traits (Halbesleben et al., 2003). Empirical research provides evidence of the significance of transformational leadership in fostering innovation in companies (Woodman et al., 1993). Transformational leadership comprises four primary components: inspiring motivation, Intellectual stimulation, personalized attention and charm (Bass and Bass Bernard, 1985).

Intellectual stimulation stimulates followers to engage in cognitive processes that are essential for creativity, including problem-solving, information discovery, problem identification, and solution generation (Reiter-Palmon and Illies, 2004). Personalized attention enables leaders to meet each team member's specific needs

while providing direction and encouragement to promote team innovation (Gong et al., 2009). A captivating vision from charismatic leaders inspires teams and fosters creative innovation (Avolio et al., 1999). By means of motivating and inspiring others, leaders create a culture that encourages followers to share their creative ideas (Gong et al., 2009).

Accordingly, employee creativity and transformational leadership have been continuously associated (Gong et al., 2009). Transformational leaders contribute significantly to the enhancement of innovation in companies by encouraging greater performance levels and fostering creative thinking (Sarros et al., 2008). According to research by (Mumford et al., 2000), transformational leadership has the ability to foster the growth of innovative concepts by offering inspiration, drive, and intellectual stimulation. In the same way, (Shin and Zhou, 2007) highlights how it fosters innovation in RD teams. Team members are empowered to provide innovative ideas to the organization by transformational leaders (Keller and Richey, 2006; Zhang et al., 2011).

The notion of "green transformational leadership," which we provide here, is based on the definitions given by (Bass and Bass Bernard, 1985), (Gardner and Avolio, 1998), and (Chen and Chang, 2013). Leadership characteristics that motivate followers to surpass expectations and accomplish environmental goals are referred to as "green transformational leadership" in environmental performance."

Organizational creativity is a driving force for innovation and must be prioritized by organizations in order to generate new solutions (Halbesleben et al., 2003). According to research, a key factor in effective product development is team creativity, which helps create innovative and useful products (Tang and Chang, 2010). Product development performance is improved by accumulated organizational creativity (Hunt and Morgan, 1995). Superior product outcomes can be achieved by innovative product development teams with distinct inventiveness in meeting consumer needs (Deshpandé et al., 1993). Therefore, the success of new product development initiatives still depends heavily on creativity (Chang et al., 2010).

From the standpoint of the client, innovative concepts are assessed according to their uniqueness and utility (Cohen et al., 1996). Product development efforts are greatly impacted by a new product idea (Cooper, 1979). Group-level creativity that results from team interactions is known as team creativity (Pirola-Merlo and Mann, 2004), and it has a favorable impact on team performance. Team creativity is seen by organizations as an essential source of innovation (Yoon et al., 2010), which improves the performance of product development (Hultink et al., 1997).

According to this interpretation, we suggest a new word, "green product development performance," which describes "the development performance of products that minimize environmental effect, are less damaging to human health, incorporate recycled components, are produced with energy efficiency, or are delivered with reduced packaging."

Green transformational leaders are instrumental in enhancing environmental performance (Andriopoulos, 2001), as organizational innovation heavily relies on their traits and behaviors (Halbesleben et al., 2003). These leaders encourage their staff to act and think creatively, which improves the environmental and organizational outcomes (Mittal and Dhar, 2015). According to research by (Mumford et al., 2000), transformational leadership has the ability to foster the growth of innovative concepts by offering inspiration, drive, and intellectual stimulation. In the same way, (Shin and Zhou, 2007) highlights how it fosters innovation in RD teams. Team members are empowered to provide innovative ideas to the organization by transformational leaders (Keller and Richey, 2006; Zhang et al., 2011).

Based on the above discussion, we posit that The relationship between team green project performance and green transformational leadership is mediated by team green creativity.

H4: Team Green Creativity will mediate the relationship between Green Transformational Leadership and Team Green Project Performance.

2.6 Team Green Innovative Climate Moderates the Relationship between Green Transformational Leadership and Team Green Creativity:

The beliefs, actions, and feelings that are present regardless of personal opinions or interpretations are examples of a firm's defining qualities that are reflected in its organizational climate (Ekvall, 1996). Specifically, an innovative atmosphere is defined by openness, trust, risk-taking, and a shared dedication to creative work among members of the organization (Ekvall, 1996). When such a climate is in place, employees are aware of the expectations for innovative behavior and align their behaviors accordingly, which frequently increases their sense of pride and self-satisfaction in the process (Scott and Bruce, 1994).

The availability of resources and encouragement for invention are the two main components of an inventive atmosphere (Jaiswal and Dhar, 2015). Supporting innovation means giving workers the freedom to work independently, to experiment with new ideas, and to appreciate variety and creativity in the workplace (Ren and Zhang, 2015). For instance, experimental research by (Amabile and Pratt, 2016) showed that offering bonuses as rewards greatly increased participants' creativity, emphasizing that rewarding and acknowledging creative work fosters an environment that is favorable to innovation. Green creative performance is further enhanced by team members' encouragement and support of one another.

Another essential component of encouraging creativity and innovation is the availability of resources, such as the required equipment, space, and time (Amabile and Pratt, 2016). Employee creativity is moderately impacted by having access to enough infrastructure, funding, knowledge, and supplies, according to Amabile, supporting the idea of a green, inventive atmosphere for innovative behavior and align their behaviors (Amabile and Pratt, 2016).

Building on the framework proposed by (Scott and Bruce, 1994), this study introduces the concept of the Green Innovative Climate (GIC). GIC refers to "a collection of employee opinions regarding the workplace that encourages taking risks for environmentally friendly goods and procedures, provides sufficient funding, and creates a demanding atmosphere to support innovation and green creative thinking (GCT) at the corporate level."

Scholarly study on the relationship between Green Transformational Leadership (GTL) and Green Creative Thinking (GCT) has been extensive. (Chen and Chang, 2013). According to research, GTL uses its intrinsic qualities to improve GCT in a variety of scenarios and industries (Mittal and Dhar, 2016). Additionally, leaders are essential in fostering an innovative environment by providing resources and support to encourage creativity (Jaiswal and Dhar, 2015).

For example, (Amabile and Pratt, 2016) made the case that managers need to encourage staff members to come up with new ideas, acknowledge their innovative contributions, and give them the resources and support they need to achieve innovation goals across the organization.

H5: Team Green Innovative Climate will Moderate the Relationship between Green Transformational Leadership and Team Green Creativity.

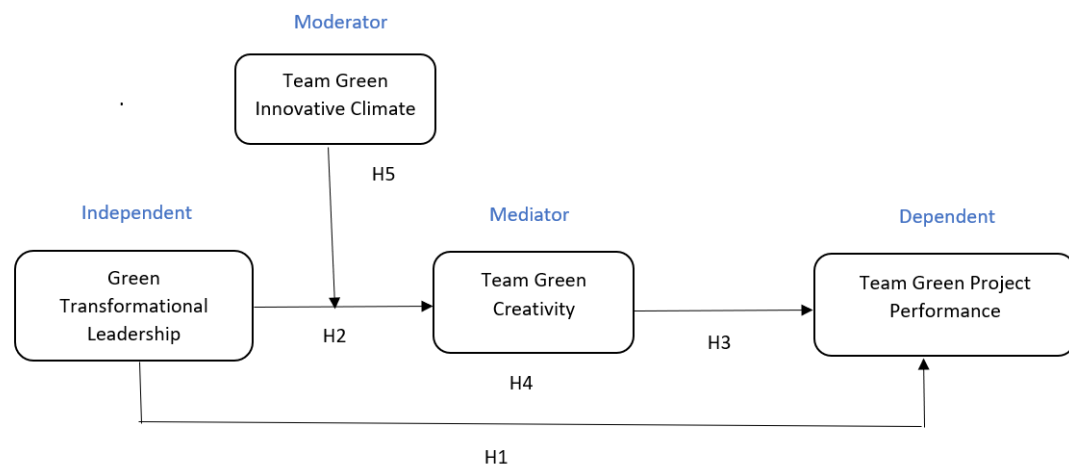
2.7 Research Model

2.8 Hypotheses of the Study

H1: Green transformational leadership will have significant positive impact on Team green project performance.

H2: Green transformational leadership will have significant positive impact on Team green creativity.

H3: Team green creativity will have significant positive impact on Team green

FIGURE 2.1: **Theoretical Framework**

project performance.

H4: Team green creativity will positively mediate the relationship between Green transformational leadership and Team green project performance.

H5: Team green innovative climate will positively moderate the relationship between Green transformational leadership and Team green creativity.

Chapter 3

Research Methodology

This research will adopt a quantitative approach, collecting data through a survey methodology. A cross-sectional design will be employed to analyze the relationships among Green Transformational Leadership (GTL), Green Team Creativity (GTC), Green Team Innovation Climate (GTIC), and Team Green Project Performance, allowing insights to be gathered from participants at a single point in time.

The methodology chapter thoroughly examines the study design, data collection strategies (covering both population and sampling), measurement methods, instrument reliability analysis, and additional aspects of the research process.

3.1 Research Design

The fundamental framework for conducting research is provided by a research design. According to (Zikmund et al., 2003) it is a meticulously designed blueprint made by academics that describes the procedures and strategies for gathering and examining relevant data.

3.1.1 Research Philosophy

Research philosophy refers to the fundamental assumptions and beliefs that guide the research process and knowledge creation. It affects the methodology, data

interpretation, and research design. This study considers the following research philosophy:

Positivism is the philosophical stance that prioritizes quantifiable and observable phenomena. It employs statistical analysis and quantitative data to comprehend how variables relate to one another. This study adopts a positivist approach focusing on the moderating effect of Green Team Innovation Climate (GTIC) and the mediating role of Green Team Creativity (GTC) in the relationship between Green Transformational Leadership (GTL) and Team Green Project Performance. The aim is to identify correlations and patterns that can be generalized to other organizations.

3.1.2 Research Method

To explore the relationships between Green Transformational Leadership (GTL), Green Team Creativity (GTC), Green Team Innovation Climate (GTIC), and Team Green Project Performance, this study employs a cross-sectional survey design as its research methodology. The research focuses on teams from organizations engaged in sustainability or green projects, ensuring varied representation across a range of industries and organizational sizes by applying a stratified random selection technique.

Data was collected through electronically distributed structured questionnaires that include validated scales for measuring GTL, GTC, GTIC, and Team Green Project Performance. The data was collected through IT firms of Rawalpindi and Islamabad and the sample size selected was 385. The analysis will utilize SPSS statistical software to conduct descriptive statistics, correlation analysis, and regression analysis to evaluate the proposed hypotheses and examine both mediating and moderating effects. Ethical considerations will be emphasized, including obtaining informed consent from participants and ensuring the confidentiality and anonymity of their responses. Through this methodology, the study aims to illuminate how Green Transformational Leadership affects Team Green Project Performance, while also considering the roles of an innovative and creative environment

in fostering effective sustainability outcomes.

3.1.3 Research Approach

This study employs a primarily quantitative research methodology to explore the relationships between Green Transformational Leadership (GTL), Green Team Creativity (GTC), Green Team Innovation Climate (GTIC), and Team Green Project Performance. By utilizing structured questionnaires for systematic data collection, this approach facilitates the identification of patterns and correlations among the key variables. Using statistical methods, the study attempts to evaluate how GTL affects Team Green Project Performance while also investigating the moderating influence of GTIC and the mediating function of GTC. This quantitative approach not only aids in testing theories but also provides empirical evidence to enhance our understanding of how leadership dynamics and team creativity contribute to the success of green projects across various organizational contexts. Additionally, the use of validated measurement scales improves the reliability and validity of the findings, ultimately advancing the field of sustainability in project management.

3.1.4 Type of the Study

This study is classified as a correlational study because its goal is to explore the relationships among several factors, specifically Green Transformational Leadership (GTL), Green Team Creativity (GTC), Green Team Innovation Climate (GTIC), and Team Green Project Performance. By investigating these connections, the research seeks to understand how GTL impacts Team Green Project Performance, with GTC serving as a mediator and GTIC as a moderator.

Additionally, the study utilizes a cross-sectional design, gathering information at a certain moment in order to offer insight into how these variables interact. This approach allows for the identification of relationships and patterns, offering valuable insights into how leadership and team dynamics affect sustainability outcomes across various organizational contexts. Ultimately, this methodology helps

establish foundational knowledge that can inform future research and practical applications in the field of green project management.

3.1.5 Unit of Analysis

The team working on green or sustainability projects in IT companies serves as the study's unit of analysis. Each team will be evaluated as a complete entity to explore the relationships between Green Transformational Leadership (GTL), Green Team Creativity (GTC), Green Team Innovation Climate (GTIC), and Team Green Project Performance. The goal of the research is to better understand leadership dynamics by concentrating on teams. and creativity in a collaborative environment, allowing for a comprehensive analysis of how these factors contribute to successful outcomes in green project management. This approach also enables the examination of how the perceptions and interactions of individual team members influence the overall performance of the team in achieving environmental goals.

3.1.6 Time Horizon

All of the data for this study will be gathered at a single moment in time because it will employ a cross-sectional time frame. This method allows for the examination of relationships between Green Transformational Leadership (GTL), Green Team Creativity (GTC), Green Team Innovation Climate (GTIC), and Team Green Project Performance without needing data over a longer period. By gathering information from teams working on sustainability or green projects at a specific moment, the research aims to find patterns and connections that show how these elements interact within organizations today. This approach gives a quick overview of what affects team performance in green project management, providing useful insights for immediate use and ideas for future research.

Data collection for this study took one and a half months and focused on the IT industry in various locations throughout Pakistan. The research employed a cross-sectional method, which was completed in one month. This approach was chosen

due to the time limitations of the study. With this method, data is collected from respondents at a single point in time, without any repeated measurements for the variables.

3.2 Population and Sample of Study

A population refers to the entire group that a researcher aims to study, while a sample is a smaller portion of that population from which data is collected. In this study, the population included all project team members working in IT organizations. Due to practical challenges in gathering data from the entire population, a sample-based research approach was employed. The required sample size of 385 was calculated using an online calculator, with a 95

IT firms with project team members actively involved in project activities were the source of the sample. Questionnaires were distributed to 385 project team members using a survey method, chosen for its efficiency in collecting data from a large number of individuals simultaneously. Ultimately, all 385 targeted project team members participated in the data collection.

The formula supplied by was used to calculate this sample size ([Johnson and Scheurman, 1977](#)), which is applicable when the total population size is unknown, with a 5

$$n = \frac{z^2}{4e^2}$$
$$n = \frac{(1.96)^2}{4(0.05)^2}$$
$$n = 384.16$$

3.3 Sampling Technique

The study used convenience sampling to collect data from project team members. This method is often used in social sciences research because it's easy and efficient. The researcher wanted to reach 385 people, and successfully got responses from all of them. Convenience sampling involves selecting people who are readily available.

TABLE 3.1: IT Companies

Names	Location
MicZon LLP.	Islamabad
9D Technologies	Islamabad
Akhtar IT solutions	Rawalpindi
TeReSol Pvt. Ltd	Islamabad
Viral Webs	Islamabad
ICILtek Pakistan Ltd	Islamabad
WebHive Technologies	Islamabad
Capital Technologies Ltd	Islamabad
Code Engineer	Rawalpindi
A J Developerz	Rawalpindi
MTBC	Rawalpindi
Online Web Design	Rawalpindi
Circular Byte	Rawalpindi

The data collected from this sample is believed to be representative of project team members within IT firms.

3.4 Data Collection Procedure

The study used online surveys to collect data from project team members in different IT organizations. Participants received guarantees that the data would only be used for academic research and that their private information would be kept confidential. Surveys were chosen because they are a convenient way to

gather information from many people at once. The questions were in English, and participants were not asked to provide any personally identifying details. 385 people completed the survey.

3.5 Research Instrument

The questionnaire items in this study are measured using a "five-point Likert scale from 1 to 5," which rates responses from strongly disagree to strongly agree. The following lists the constructs' definitions and measurements used in this study: In addition to Likert scale questions, the forms included four demographic factors—gender, age, qualification, and experience—that were evaluated using closed-ended questions. The questionnaire was divided into five sections that participants were expected to complete:

- Demographics Variables (Gender, Age, Education and Experience)
- Green Transformational Leadership
- Team Green Project Performance
- Team Green Creativity
- Team Green Innovative Climate

Description about the scales used for each variable in this study is given below:

3.5.1 Green Transformational Leadership

In order to measure Green Transformational Leadership (GTL), ([Chen and Chang, 2013](#)) created a six-item scale. A Likert scale with five points, from 1 (strongly disagree) to 5 (strongly agree), was used to score each item.

3.5.2 Team Green Creativity

According to ([Amabile et al., 1988](#)), we offer a fresh concept called "green creativity," which we describe as "the development of new ideas about green products, green services, green processes, or green practices that are judged to be original,

TABLE 3.2: Summary of Scale

Variables	Scale	Items
Green Transformational leadership	(Chen and Chang, 2013)	06
Team Green Project Performance	(Henderson and Lee, 1992)	07
Team Green Creativity	(Barczak et al., 2010)	06
Team Green Innovative Climate	Scott and Bruce (1994)	08

novel, and useful.” Furthermore, we employ (Rego et al., 2007) and (Barczak et al., 2010) to measure green creativity. They use a five-point Likert scale and six items.

3.5.3 Team Green Innovative Climate

The original concept, ”TGIC,” is presented in the study, and the author cites the innovation climate put out by (Scott and Bruce, 1994) and further supported by the most current study by (Jaiswal and Dhar, 2015), which is transformational. In light of the environmental context, the constructions’ eight measurement items were altered Scott and Bruce (1994).

3.5.4 Team Green Project Performance

A seven-item scale created by (Henderson and Lee, 1992) was employed to measure the performance of the green project team. The following is an example: ”My team adhered well to the green project schedule.” On a five-point Likert scale, 1 represents strongly disagree and 5 represents strongly agree.

3.6 Data Collection Technique

Due to constraints such as time, budget, and other constraints, a non-probabilistic convenience sampling strategy was used for data collection in this study. This well accepted strategy is selected for its effectiveness in eliciting a greater response rate. This strategy, which is especially common in social sciences research, is noted

for its time and energy efficiency, allowing for the collecting of desired data and evidence with minimum effort. The study required reaching out to 385 project team members for data gathering, which resulted in 385 answers. Convenience sampling entails picking individuals who are conveniently available, making it a practical and simple data gathering strategy. The data received from this sample was deemed to be a Within IT firms, true representation of project team members is provided.

3.7 Method of Analysis

Questionnaires were used to administer the data for this investigation. Subsequent to the data collection phase, the information underwent entry, cleaning, and analysis using the Statistical Package for the Social Sciences-21 (SPSS-21) as the primary analytical tool. The analysis was conducted using Andrew F. Hayes' SPSS-21 PROCESS macro, a versatile tool known for its capability to assess various models, including mediation, multi-mediation, mediation-moderation, and moderation-mediation. Its user-friendly instructions simplify the testing of intricate data processing and analysis. The following tests were conducted using SPSS:

- A test for figuring out the frequencies of demographic variables is descriptive statistics.
- A descriptive statistics test to calculate the standard deviation and mean.
- Analysis of dependability and correlation. By evaluating a measurement tool's consistency, reliability analysis makes sure that the data gathered is reliable and steady throughout time. The most often used technique, Cronbach's Alpha (α), gauges the internal consistency of linked scale elements.
- Using Andrew F. Hayes' PROCESS macro version 4.0, regression, moderation (Model 1), and mediation (Model 4) tests were conducted.
- Since our study shows that moderated mediation is present, Model 7 was selected to perform tests for both mediation and moderation.

3.8 Sample Characteristics

3.8.1 Gender

The gender breakdown of the sample shows a total of 385 participants, consisting of 225 men and 160 women. This results in a gender distribution where 58.4 percent of respondents are male, and 41.6 percent are female. Though there is a slight predominance of males in the study, the gender split remains relatively balanced. Such distribution ensures that perspectives from both male and female respondents are adequately captured, allowing the study to potentially uncover any gender-based differences or similarities, especially in the context of leadership, team collaboration, and project outcomes related to green initiatives.

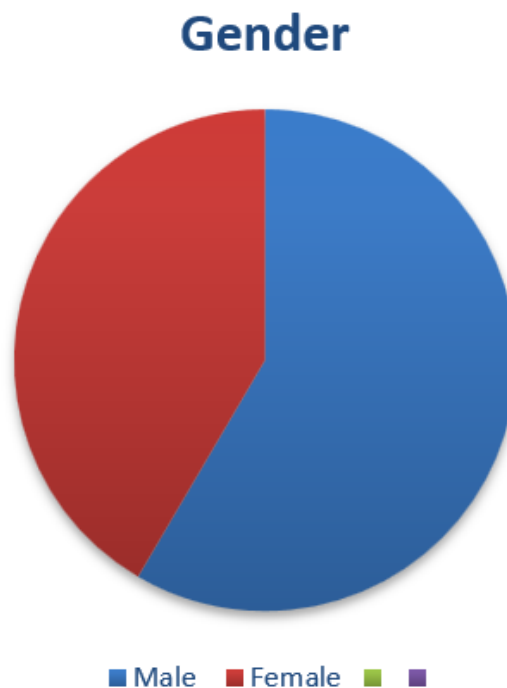


FIGURE 3.1: Gender

3.8.2 Age

The study includes a diverse range of age groups among its participants, offering valuable insights into how Green Transformational Leadership, Team Green Creativity, and Team Green Innovation Climate influence individuals across various

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	225	58.40	58.40	58.40
Female	160	41.6	41.6	100
Total	385	100.0	100.0	

TABLE 3.3: Gender

career stages. This variation in age allows for a richer understanding of how different generational groups perceive leadership, creativity, and innovation within green projects. By analyzing responses from participants at different ages, the study can uncover potential generational differences in leadership responsiveness, team creativity, and project outcomes. The broad age range within the sample enhances the credibility and applicability of the study's findings across different organizational and cultural contexts.

TABLE 3.4: Age

	Frequency	Percent	Valid Percent	Cumulative Percent
20-30	79	20.5	20.5	20.5
31-40	176	45.7	45.7	66.2
41-50	94	24.4	24.4	90.6
50 Above	36	9.4	9.4	100.0
Total	385	100.0	100.0	

Table 3.3 above illustrates the age distribution of the 385 respondents. Among them, 79 individuals fell within the 20-30 age range, which accounts for 20.5 percent of the total sample. The largest group consists of 176 respondents, aged between 30-40, making up 45.7 percent of the participants. A further 94 individuals were aged 40-50, representing about 24.4 percent of the total. Lastly, 36 respondents were in the 50+ age category, contributing to 9.4 percent of the overall sample size.

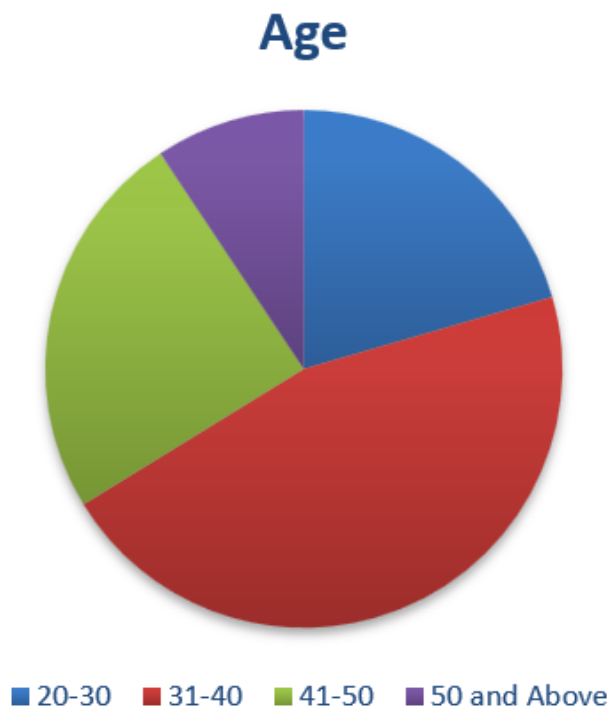


FIGURE 3.2: Age

3.8.3 Qualification

The study's participants have a diverse range of educational backgrounds, from advanced postgraduate degrees to undergraduate degrees. Because of this diversity, it is possible to thoroughly analyze how different educational backgrounds affect how Green Transformational Leadership (GTL), Team Green Creativity (GTC), and the Green Team Innovation Climate (GTIC) are understood and applied. The study can find trends in how education influences leadership effectiveness, encourages creativity, and supports an innovative culture within green project teams by combining viewpoints from people with varying academic backgrounds. Furthermore, examining individuals with varying educational backgrounds reveals whether advanced degrees are linked to better inventive climate, more creative teams, and more successful green leadership tactics. The study's generalizability is strengthened by this variation, guaranteeing that its conclusions can be used in a variety of organizational contexts. Furthermore, by reducing biases and offering a comprehensive understanding of how education affects team dynamics, creativity, and project performance in sustainable projects, the inclusion of varied educational backgrounds improves the study's dependability.

TABLE 3.5: Education

	Frequency	Percent	Valid Percent	Cumulative
Below Bachelors	86	22.3	22.3	22.3
Bachelors	179	46.2	46.2	68.6
Masters above	120	31.4	31.4	100
Total	385	100.0	100.0	

Qualification

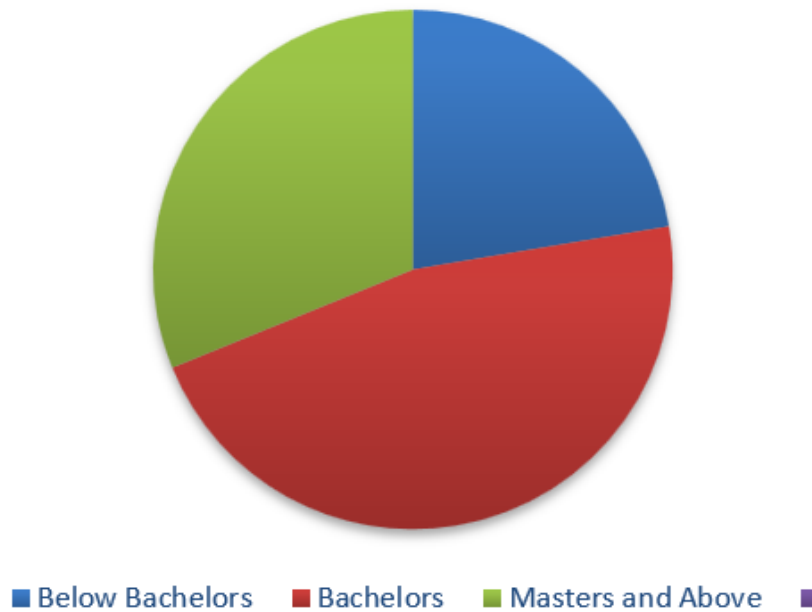


FIGURE 3.3: Qualification

An analysis of Table 3.5 shows that 86 respondents, making up 22.3 percent of the sample, held educational qualifications below a bachelor’s degree. Additionally, 178 participants, or 46.2 percent of the total, had earned a bachelor’s degree. The remaining 121 respondents, representing 31.4 percent, possessed qualifications at the master’s level or higher. This distribution highlights a diverse range of educational backgrounds among the participants, which could offer valuable insights into how education level influences their understanding of leadership, creativity, and innovation in green projects which is important for the green development of organizations.

3.8.4 Designation

The research included participants from various job roles, offering a detailed view of how individuals at different organizational levels perceive Green Transformational Leadership, Team Green Innovative Climate, and Team Green Creativity. This broad range of designations—from entry-level employees to senior managers—ensures that diverse perspectives are captured, enabling a deeper understanding of how leadership influences team dynamics and project performance. Collecting data from participants in multiple roles allows the study to explore whether leadership strategies and innovation climates are experienced differently across organizational hierarchies. This insight is key to identifying whether the impact of leadership and creativity varies depending on one’s position within the organization, thus enhancing the relevance and applicability of the findings to a wide array of business environments. The overall cumulative percentage total is of 385 people participated in this survey and divided in to segments according to the designation.

TABLE 3.6: Designation

	Frequency	Percent	Valid Percent	Cumulative
LineManagement	192	49.9	49.9	49.9
MiddleManagement	176	45.7	45.7	95.6
TopManagement	17	4.4	4.4	100
Total	385	100.0	100.0	

Table 3.6 indicates that 192 respondents, representing 49.9 percent of the total, were part of the line management team. Additionally, 176 participants, accounting for 45.7 percent, held middle management positions, while 17 respondents, or 4.4 percent, were classified as top management. This distribution provides a diverse range of perspectives across different management levels, enriching the study’s insights into how leadership and team dynamics influence green project performance.

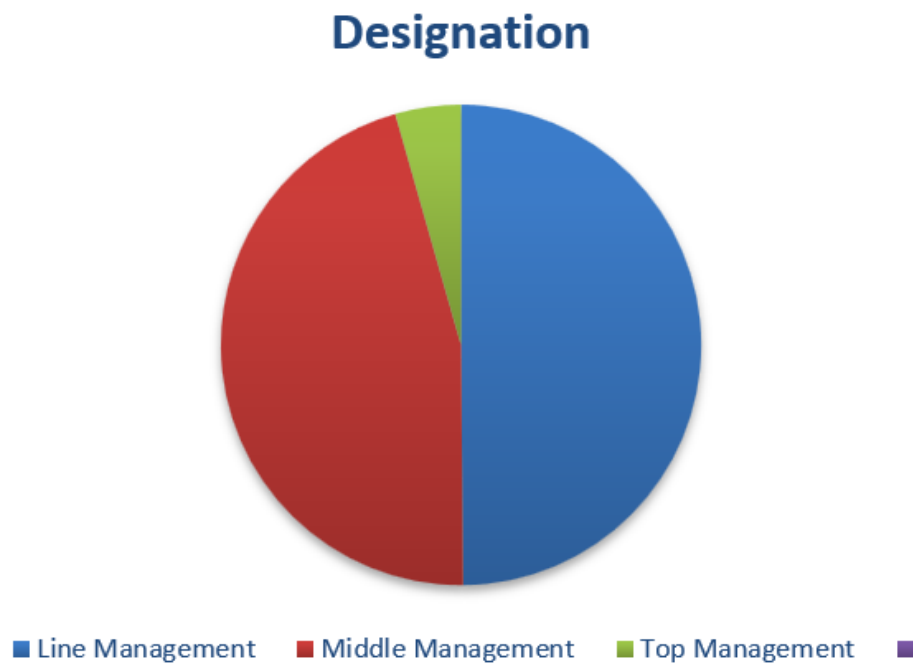


FIGURE 3.4: Designation

3.9 Pilot Testing

Before conducting a full-scale analysis, researchers often carry out a pilot study to assess the reliability of the measurement scales used in the research project. This preliminary step typically follows the same methods and approaches intended for the main study. The pilot study aims to validate the variables and ensure that the scales accurately measure what they are intended to.

By gathering early feedback from participants, the pilot study helps determine whether the survey items are clearly understood and fit for purpose. This step is essential for refining the research instruments, ensuring they collect the necessary data and resonate well with respondents before proceeding to the larger study.

3.10 Reliability Analysis

By evaluating the variables' internal consistency, reliability analysis seeks to show the relationships between various variables. A scale seems reliable if its Cronbach's alpha value exceeds 0.7, as noted by (Colom et al., 2006).

According to Table 3.7, each variable's Cronbach's alpha is above 0.7, indicating good reliability. For Green transformational leadership, the Cronbach's alpha is

TABLE 3.7: Reliability Analysis

Variables	No. of Items	Cronbach Alpha
Green transformational leadership	6	0.86
Team Green project performance	7	0.89
Team Green creativity	6	0.88
Team Green Innovative Climate	8	0.88

0.863 with 6 items. Team Green project performance has a Cronbach's alpha of 0.885 with 7 items. Team Green creativity shows a Cronbach's alpha of 0.886 based on 6 items, while Team Green Innovative Climate has a Cronbach's alpha of 0.880 with 8 items.

3.11 Data Analysis Techniques

After gathering data, the analysis concentrated on a relevant and fully completed dataset consisting of 385 responses that had no duplicates or missing values. SPSS 26 was utilized for data analysis, following these procedural steps:

1. To ensure meaningful analysis, the first step was to carefully choose the pertinent questions that matched the goals of the study. This procedure improves the validity and reliability of the results and aids in precisely measuring the desired variables.
2. To ensure meaningful analysis, the first step was to carefully choose the pertinent questions that matched the goals of the study. This procedure improves the validity and reliability of the results and aids in precisely measuring the desired variables.
3. The sample's characteristics are summed up in a frequency table, which displays the distribution of participants by age, experience, and education. It guarantees data transparency for trustworthy analysis and aids in pattern recognition.

4. To summarize the data, descriptive statistics like mean, standard deviation, and frequency were computed using numerical values. These metrics aid in the analysis of the sample's general distribution, trends, and variances.
5. To evaluate internal consistency and guarantee the measurement scale's dependability, Cronbach's alpha was computed for every variable. Stronger dependability is shown by a higher alpha value, which verifies that the items in each variable are closely linked and accurately measure the same notion.
6. Using a correlation analysis, important linkages were found by examining the direction and intensity of relationships between variables. The study's interpretations and hypotheses are supported by this analysis, which sheds light on how closely variables are related to one another.
7. In order to ascertain how the variables interact with one another, this correlation study sought to identify and develop meaningful links between them. It sought to provide readers a better grasp of the relationships and influences among the study's major components.
8. To illustrate the suggested relationship between the independent and dependent variables, a basic linear regression analysis was performed.
9. Mediation between the independent and dependent variables was assessed using the technique described by (Preacher and Hayes, 2008).
10. The presence of a moderator between the independent variable and the mediating variable was evaluated using the macro process methodology.
11. Finally, the Preacher and Hayes method, along with correlation analysis, was reviewed to validate and analyze the acceptance or rejection of the hypothesized relationships.

3.12 Research Ethics

High ethical standards were upheld throughout the research thesis, particularly during the data collection phase. Before gathering responses, participants were thoroughly informed about the study's objectives, and their feedback was solicited

and incorporated into the subsequent analysis. To protect the confidentiality of respondents, anonymity was ensured, especially since subordinates were asked to complete a project team members' incivility questionnaire, which could have led to potential issues for them.

Moreover, data collection took place in genuine settings, and participants were not forced to provide immediate answers. Sufficient time was given for their convenience, and they were not pressured to provide specific responses.

Although there were challenges, such as some respondents misplacing or not returning questionnaires, all responses reflected appropriate behavior, with no incidents of inappropriate language or misconduct.

Chapter 4

Data Analysis and Results

This chapter focuses on a comprehensive presentation of the complete set of results, clarifying whether the hypotheses were accepted or rejected. It includes detailed information on mean values and standard deviations. Various tests—such as correlation analysis, mediation analysis, moderation analysis, and moderated mediation analysis—were conducted on the full dataset using SPSS. The results are systematically compared to each hypothesis, with appropriate justifications provided alongside their presentation.

The chapter emphasizes the execution process, detailing the methodology used in SPSS for the analyses. It serves as a central repository for all findings obtained from the research.

4.1 Descriptive Statistics

Descriptive analysis serves multiple purposes, including revealing data distribution, identifying errors and outliers, and recognizing patterns among variables. It plays a crucial role in determining whether the data is suitable for further statistical analysis. This analysis aids in interpreting and summarizing data points, unveiling patterns that characterize each aspect of the data. Mean values offer valuable insights into the overall trend of the data, providing a concise summary

of where the majority of responses lie. In Table 4.1, the mean values for each variable consistently fall within the range of 6, indicating that a substantial number of respondents expressed a neutral stance—neither agreeing nor disagreeing with the statements in the questionnaire. Specifically, the mean value for Green transformational leadership in the table is 4.27, indicating that a majority of respondents agree with the questions related to Green performance methods. The Standard Deviation column in Table 4.1 delves into the distribution’s structure, illustrating how closely individual data values align with the mean. Standard deviation provides insights into how well the sample mean represents the true mean of the population. Analyzing both the mean and standard deviation together paints a clearer picture than examining the mean in isolation. The purpose of standard deviation analysis is to gauge the range or spread of data around the mean, with negative standard deviation being an uncommon occurrence. This comprehensive approach to descriptive analysis aids in better understanding the characteristics of the dataset.

TABLE 4.1: Descriptive Statistics

Variables	Mean	Std. Deviation
GTL	4.27	0.61
TGPP	4.29	0.60
TGC	4.16	0.65
TGIC	4.19	0.59

N=385

Table 4.1 displays the study variables in the first column, with mean values in the second column and standard deviation values in the third column. These figures, reflecting respondents’ observations on specific variables, capture the essence of the responses. Green Transformational Leadership (GTL) had a mean value of 4.2714 and a standard deviation of 0.61859. Team Green Project Performance (TGPP) had a mean value of 4.2998 with a standard deviation of 0.60408. Team Green Creativity (TGC) showed a mean value of 4.1602 and a standard deviation

of 0.65971. Lastly, Team Green Innovative Climate (TGIC) recorded a mean value of 4.1977 and a standard deviation of 0.59401.

4.2 Correlation Analysis

To analyze the relationships between the variables, I utilized the Pearson correlation test, which quantifies the strength of these associations with a single value. Correlation values range from -1 to +1, with strong correlations typically falling within this range. The strength of the relationships is commonly evaluated using correlation coefficients. Following the guidelines established by Cohen, West, Aiken (2014), values between 0.10 and 0.29 indicate a weak or negligible association, 0.30 to 0.49 suggest a moderate correlation, and values from 0.50 to 0.80 indicate a substantial correlation. Values above 0.80 may signify a strong relationship, which could raise concerns regarding multicollinearity.

In this study, the correlation between Green Transformational Leadership (GTL) and Team Green Project Performance (TGPP) is 0.935**, demonstrating a significant and strong positive correlation. This implies that enhancing GTL is likely to have a beneficial effect on TGPP. The correlation between GTL and Team Green Creativity (TGC) is 0.562**, indicating a moderate positive association, suggesting that an increase in GTL could lead to higher levels of TGC.

The correlation coefficient between TGC and TGPP is 0.648**, reflecting a moderate relationship between these two variables. Additionally, the correlation between GTL and Team Green Innovative Climate (TGIC) is 0.767**, indicating a substantial relationship and suggesting that promoting GTL can positively influence TGIC.

Moreover, the correlation coefficient between TGIC and TGC is 0.865**, indicating a strong relationship, which suggests that enhancements in TGIC are likely to boost TGC. The correlation between TGPP and TGIC is also strong at 0.752**, demonstrating a significant relationship between these variables.

The significance levels (P values) in the analysis are critical for assessing the reliability of the observed relationships. A P value lower than 0.01 indicates a

highly significant association, reflecting a 1 percent chance of data error. In the accompanying table, values marked with “**” denote associations with less than 1 percent error, emphasizing a 99 percent significance level for these relationships. It is crucial to consider any potential multicollinearity issues and to interpret the findings with attention to the significance levels to ensure the robustness of the study’s results.

TABLE 4.2: Correlation Analysis

Variables	GTL	TGPP	TGC	TGIC
GTL	1			
TGPP	0.93**	1		
TGC	0.56**	0.64**	1	
TGIC	0.76**	0.75**	0.86**	1

N = 385

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

GTL = Green Transformational Leadership

TGPP = Team Green project performance

TGC = Team Green Creativity

TGIC = Team Green Innovative Climate

The findings of this study indicate that all variables are strongly and positively correlated with one another. These results align with our hypothesis, and further research will be conducted to explore this relationship in greater depth.

4.3 Regression Analysis

In this study, correlation analysis was utilized to explore the relationships between the variables. However, it is important to recognize that correlation analysis only reveals the presence of a relationship without determining how much one variable depends on the other.

To overcome this limitation, regression analysis was conducted to evaluate the degree of dependence between variables. It is worth noting that values deemed significant in correlation analysis may not necessarily remain significant in regression analysis.

The anticipated relationships between the variables were tested using Andrew F. Hayes' 2016 PROCESS Macro. This tool uses the bootstrapping method, which involves drawing random samples from the data to generate statistical estimates for each sample. In this study, the fourth model of the PROCESS Macro was applied to analyze the relationship between Green Transformational Leadership (GTL) and Team Green Project Performance (TGPP), the link between GTL and Team Green Creativity (TGC), the association between TGC and TGPP, the mediating effect of TGC on the GTL-TGPP relationship, and the moderating role of Team Green Innovative Climate (TGIC) on the same relationship.

Additionally, to investigate moderated mediation and the influence of Team Green Creativity within the model, Model 1 of the PROCESS Macro was used to assess the mediating effect of TGC on the relationship between Green Transformational Leadership and Team Green Project Performance, with TGIC acting as the moderator.

4.3.1 Direct Effect of Green Transformational leadership on Team Green Project Performance:

In the first phase, we evaluate the relationship between the Green Transformational Leadership (GTL) variable and the dependent variable, Team Green Project Performance (TGPP), represented as path "c." This analysis examines the direct influence of leadership strategies on team project performance. In Table 4.3, the Green Transformational Leadership variable is labeled as "X," while Team Green Project Performance is indicated as "Y."

The findings in Table 4.3 and Figure 4.1 show a p-value of 0.000, which is below the 0.05 threshold, confirming the significance of the relationship between Green Transformational Leadership (GTL) and Team Green Project Performance (TGPP). Additionally, since the Confidence Interval's Lower Limit (LLCI) is

TABLE 4.3: Direct Effect of Green Transformational Leadership on Team Green Project Performance

Predictors	β	SE	T	P	LLCI	ULCI
GTL to TGPP	0.81	0.02	41.67	0	0.77	0.85

N = 385, CI = Confidence Interval, LL = Lower Limit, UL = Upper Limit

0.7757 and the Upper Limit (ULCI) is 0.8525, with no inclusion of zero, the strength of this relationship is further validated. These results indicate that Green Transformational Leadership has a strong direct effect on Team Green Project Performance. As a result, the first hypothesis, suggesting a positive link between Green Transformational Leadership and Team Green Project Performance, is confirmed. Therefore, the hypothesis stating "Green Transformational Leadership has a significant impact on Team Green Project Performance" is supported by the evidence.

H1: Green Transformational leadership has significant relationship with Team Green Project Performance.

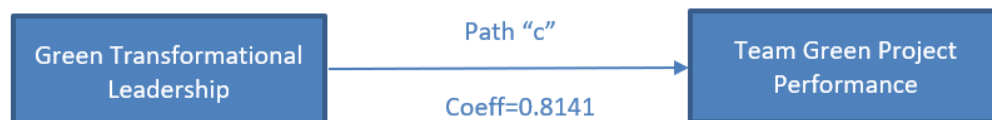


FIGURE 4.1: Direct Effect of X on Y

4.4 Mediation Analysis

In the second phase of the analysis, the focus is on examining the connection between Green Transformational Leadership (GTL) and Team Green Creativity (TGC), known as path "a." The data shown in Table 4.4 and Figure 4.2 reveal a p-value of 0.000, which is significantly below 0.01, confirming the strong relationship between these variables. Additionally, the Confidence Interval, with a Lower Limit (LLCI) of 0.5105 and an Upper Limit (ULCI) of 0.6878, does not overlap, further highlighting the robustness of the link. The coefficient of 0.5991 suggests that GTL

results in a 59.91-unit increase in TGC. Moreover, the positive standard error (SE) of 0.0451 indicates that as GTL grows, TGC is also expected to increase. Consequently, the second hypothesis, which posits a positive association between Green Transformational Leadership and Team Green Creativity, is supported by the findings.

TABLE 4.4: Direct Effect of X on M

Predictors	β	SE	T	P	LLCI	ULCI
GTL(X) to TGC (M)	0.59	0.04	13.29	0	0.51	0.68

N = 385, LL = Lower Limit; UL = Upper Limit; CI = Confidence Interval.

The coefficient mentioned in Table 4.4 is 0.5991. This means that 1 unit change in Green Transformational leadership was bring 68.80 unit changing in Team Green creativity.

H2: Green Transformational leadership and Team Green creativity are supported/connected with each other.

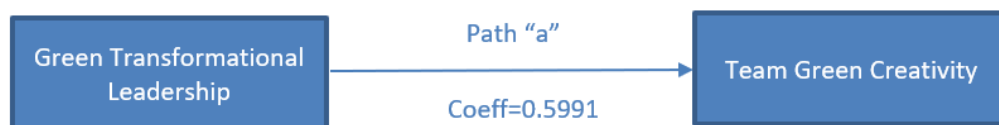


FIGURE 4.2: Direct Effect of X on M

In the third step, we analyze the link between Team Green Creativity (TGC) and Team Green Project Performance (TGPP), represented as path "b." The data in Table 4.5 and Figure 4.3 reveal a p-value of 0.000, which is below the 0.01 threshold, indicating a significant relationship. Additionally, the Confidence Interval ranges, with a Lower Limit (LLCI) of 0.1284 and an Upper Limit (ULCI) of 0.2005, do not overlap, reinforcing the strength of this connection. The coefficient of 0.1645 signifies that a 16.45-unit change in TGC corresponds with an increase in TGPP. This positive coefficient indicates that an improvement in Team Green Creativity is likely to enhance Team Green Project Performance. Consequently, the third

hypothesis, suggesting a positive correlation between Team Green Creativity and Team Green Project Performance, is supported by these findings.

H3: Team Green Creativity have supported with the Team Green Project Performance.

TABLE 4.5: Direct Effect of M on Y

Predictors	β	SE	T	P	LLCI	ULCI
TGC (M) to TGPP (Y)	0.16	0.01	8.97	0	0.12	0.20

N = 385, LL = Lower Limit; UL =Upper Limit; CI = Confidence Interval.

The value of coefficient and value of P describes that Team Green Creativity have a significant impact on Team Green Project Performance since hypothesis third is supported.

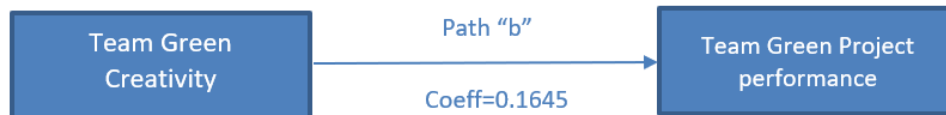


FIGURE 4.3: Direct Effect of M on Y

The indirect influence of Green Transformational Leadership (GTL) on Team Green Project Performance (TGPP) via Team Green Creativity (TGC), known as path "c," is found to be significant. This finding is reinforced by the bootstrapping analysis, which shows a Lower Limit of the Confidence Interval (BOOT LLCI) at 0.0595 and an Upper Limit (BOOT ULCI) at 0.1496, with no overlap of zero. These positive results validate the existence of mediation in the model. The total effect is derived by combining the direct and indirect impacts, with the indirect effect being 0.0985. The positive value of this effect suggests that the mediator, TGC, strengthens the overall influence.

H4: the fourth hypothesis, which proposes that Team Green Creativity mediates the significant relationship between Green Transformational Leadership and Team Green Project Performance, is confirmed.

TABLE 4.6: Indirect Effect of Mediator

Predictors	β	Boot SE	Boot LLCI	Boot ULCI
X to M to Y	0.09	0.02	0.06	0.15

N = 385, LL = Lower Limit; UL = Upper Limit; CI = Confidence Interval.

The observed values of the indirect effect, as shown in Table 4.6 and Figure 4.4, are deemed significant. These results support the fourth hypothesis, affirming that Team Green Creativity mediates the relationship between Green Transformational Leadership (GTL) and Team Green Project Performance (TGPP).

Based on the data in Table 4.6 and Figure 4.4, the significance of the values confirms the hypothesis that "Team Green Creativity mediates the significant relationship between Green Transformational Leadership and Team Green Project Performance." Therefore, the fourth hypothesis is validated.

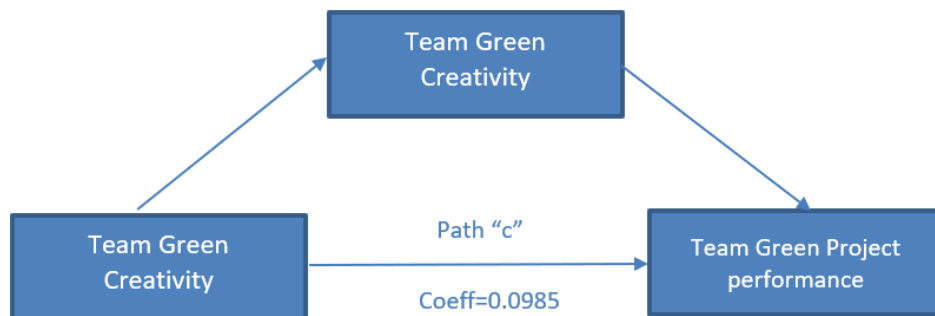


FIGURE 4.4: Mediation Analysis

4.4.1 Moderation Analysis

The Confidence Interval values shown in Table 4.7 reveal that the Lower Limit (LLCI) is -0.0658, while the Upper Limit (ULCI) is 0.0015, indicating no overlap between these two values. Furthermore, the p-value of 0.0611 exceeds the significance level of 0.01. These results imply that the moderator does not exert a statistically significant influence. Therefore, the findings do not support the fifth hypothesis, which proposed that Team Green Innovative Climate (TGIC)

moderates the relationship between Green Transformational Leadership (GTL) and Team Green Creativity (TGC) in a manner that an increase in TGIC would enhance this relationship.

TABLE 4.7: Moderation Analysis

	β	SE	T	P	LLCI	ULCI
Constant	-0.16	0.2685	-0.63	0.52	-0.69	0.35
Int-1	-0.03	0.01	-1.87	0.06	-0.07	0.00

N = 385, LL = Lower Limit; UL =Upper Limit; CI = Confidence Interval.

The table indicates that the moderation hypothesis is not supported. The interaction term coefficient is =0.0322, and the p-value is 0.0611, suggesting an insignificant effect of Team Green Innovative Climate (TGIC). To further evaluate the moderation effect, we look at the Lower Limit of Confidence Interval (LLCI) and Upper Limit of Confidence Interval (ULCI). The LLCI is -0.0658, and the ULCI is 0.0015, showing that zero falls between these two values. Thus, we conclude that no moderation effect exists.

4.4.2 Moderated Mediation

A statistical method for analyzing the intricate interactions between variables is moderated mediation analysis, which looks at both direct and indirect effects. The moderator variable affects the direction or strength of this indirect effect, whereas the mediator variable in this study describes the link between an independent variable and a dependent variable. The study's moderated mediation impact was tested using PROCESS macro Model 7, which is particularly developed to look at both moderation and mediation at the same time. The objective of this analysis was to determine how Team Green Innovative Climate, with Team Green Creativity serving as a mediator, moderates the indirect association between Green Transformational Leadership (GTL) and Team Green Project Performance.

The findings are displayed in Table 4.5, where the BootLLCI and BootULCI values are -0.0033 and 0.0150, respectively. The range of the mediated effect's true value

is shown by these bootstrapped confidence intervals. The fact that there is no zero in the interval indicates that GTL has a considerable indirect impact on project performance through team green creativity, and that this impact is impacted by the team green innovative climate.

Furthermore, the moderated mediation effect's amplitude is measured by the Index of Moderated Mediation, which is at 0.0025. The strength of the indirect effect of GTL on project performance through creativity varies depending on the level of inventive climate, as indicated by a positive index value, which shows that the innovative climate does, in fact, regulate the mediation process. This result lends credence to the notion that the team environment has a big impact on how well or poorly creativity and project performance are related. So according to the

TABLE 4.8: Moderation Mediation

Predictors	Index	Boot SE	Boot LLCI	Boot ULCI
TGIC	0.002	0.004	-0.003	0.01

N = 385, LL = Lower Limit; UL =Upper Limit; CI = Confidence Interval.

table 4.8 the zero is between lower and upper confidence interval which indicates that Moderated mediating effect of Team Green innovative climate is insignificant. Hence the hypothesis H5 is not supported.

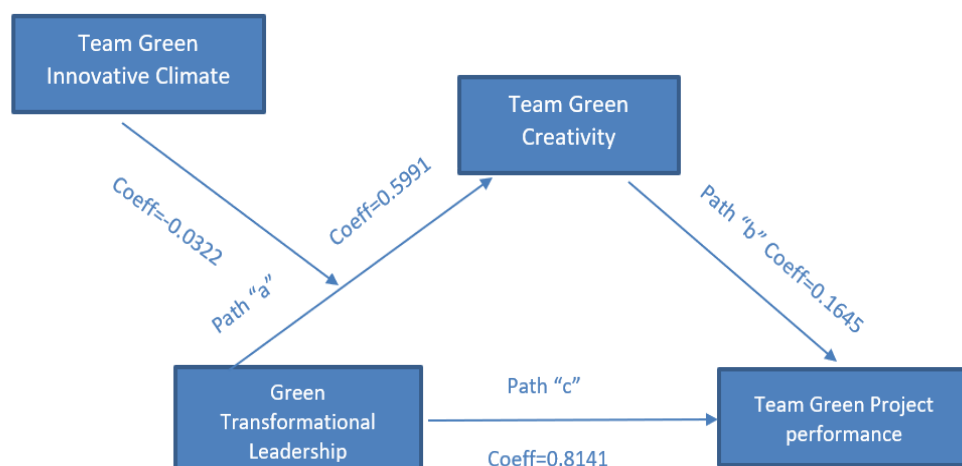


FIGURE 4.5: Moderated Mediation Impact of Team Green Innovative Climate

4.5 Hypothesis Results

TABLE 4.9: Results of Hypothesis Summary

Hypothesis	Statement	Results
H1	Green Transformational Leadership (GTL) has a significant relationship with Team Green Project Performance (TGPP).	Supported
H2	There is a significant relationship between Green Transformational Leadership (GTL) and Team Green Creativity (TGC).	Supported
H3	There is a significant relationship between Team Green Creativity (TGC) and Team Green Project Performance (TGPP).	Supported
H4	Team Green Creativity (TGC) mediates the significant relationship between Green Transformational Leadership (GTL) and Team Green Project Performance (TGPP).	Supported
H5	Team Green Innovative Climate (TGIC) moderates the significant relationship between Green Transformational Leadership (GTL) and Team Green Creativity (TGC).	Not Supported

Chapter 5

Discussion and Conclusion

5.1 Introduction

Discussion of the research's findings is included in this chapter. Discussions of the hypotheses, their acceptance and rejection, their theoretical and practical implications, their strength and weaknesses, their limitations, and their future directions are also included. This chapter presents the study's overall conclusion.

5.2 Discussion

This chapter explores the significance of the research findings in relation to the existing body of literature. Drawing on theoretical assumptions, the findings highlight the relationships between Green Transformational Leadership (GTL), Team Green Creativity (TGC), and Team Green Project Performance (TGPP). The study also examines the moderating role of Team Green Innovative Climate (TGIC) and the mediating role of TGC.

The chapter confirms and expands on the relationships discussed previously, focusing on the positive connections between GTL and TGC, as well as the significant link between TGC and TGPP. It also addresses the conclusion that TGIC did not significantly moderate the relationships, although the mediation effect was supported.

A thorough analysis of the relationships and data findings is presented, providing insights into how this study fits within the broader research context. The chapter closes by relating these findings to previous research, highlighting areas of agreement and divergence, and evaluating the contributions of this study to both theory and practice.

GTFL encourages staff members to learn new things (Al-Hosam et al., 2016) and take an active part in product development and green innovation processes. Through this engagement, businesses can improve their environmental performance and launch eco-friendly goods and services (Gotsi et al., 2010). Previous research has referred to additional investigation into the mediating elements between innovation and transformational leadership (Berraies and Zine El Abidine, 2019), as well as between firm performance and HRM practices (Para-González et al., 2018). Leadership is seen as an essential organizational resource for environmental management, as per the Resource-Based View (RBV) (Zhou et al., 2018). GTFL encourages staff members to learn new things (Al-Hosam et al., 2016) and take an active part in product development and green innovation processes. Through this engagement, businesses can improve their environmental performance and launch eco-friendly goods and services (Gotsi et al., 2010). Previous research has referred to additional investigation into the mediating elements between innovation and transformational leadership (Berraies and Zine El Abidine, 2019), as well as between firm performance and HRM practices (Para-González et al., 2018). Leadership is seen as an essential organizational resource for environmental management, as per the Resource-Based View (RBV) (Zhou et al., 2018).

Among several leadership styles, transformational leadership influences corporate innovation and performance by inspiring, motivating, and promoting trust and alignment with the leader's vision (Niranjan and Thakur, 2017). It has been demonstrated that GTFL is essential for improving company performance (Niranjan and Thakur, 2017) by encouraging productivity on an organizational, team, and individual level. Innovativeness, extra-role engagement, and in-role task efficacy are among the behaviors it promotes (Chen and Chang, 2013). Previous study emphasizes the importance of environmental management in light of growing

stakeholder demand on firms to prioritize it (Liu, 2018).

Research by (Stevens et al., 2021) demonstrates that GTFL positively impacts green work engagement, which subsequently enhances environmental performance. Furthermore, GTFL promotes team green creativity, ultimately improving environmental outcomes. Based on these insights, the following hypothesis was developed to guide this study. Hypothesis 1: Green Transformational Leadership and Team Green Project Performance

The data strongly support the hypothesis that Green Transformational Leadership (GTL) positively impacts Team Green Project Performance (TGPP). As shown in Table 4.3, the analysis reveals a significant relationship with a p-value of 0.000, which is well below the standard threshold of 0.05. The confidence interval (LLCI = 0.7757, ULCI = 0.8525) further supports this strong connection.

Thus, Hypothesis 1 is confirmed, indicating that GTL significantly influences TGPP in project-based organizations, particularly by encouraging leadership that values and enhances team contributions to significant Green project performance.

The second hypothesis posits that Green Transformational Leadership (GTL) has a positive influence on Team Green Creativity (TGC).

The concept of "green transformational leadership," as defined by (Carless, 1998), (Chen and Chang, 2013), and (Gardner and Avolio, 1998), is adopted in this study. It entails leadership behaviors that inspire teams to surpass environmental performance standards and motivate them to accomplish environmental goals. In the IT industry, green transformational leadership and green creativity are closely related, according to (Chen and Chang, 2013). We postulate that green transformational leadership has a favorable impact on team green creativity based on this knowledge.

Green creativity involves generating environmentally friendly products and processes through innovative business strategies. These strategies may include adopting eco-friendly designs, reducing emissions, optimizing material usage, utilizing sustainable raw materials, and minimizing water and energy consumption (Albort-Morant et al., 2016). In the IT industry, green transformational leadership and green creativity are closely related, according to (Chen and Chang, 2013).

The results (Table 4.4) offer strong support, with a p-value of 0.000 (less than 0.01) and a confidence interval (LLCI = 0.5105, ULCI = 0.6878), affirming a significant positive relationship between GTL and TGC.

The coefficient of 0.5991 indicates that GTL leads to a substantial increase in TGC. This finding aligns with previous research on leadership's critical role in driving creativity and Green knowledge, underscoring the importance of leadership styles that foster creativity within project teams.

The third hypothesis suggests a positive association between TGC and TGPP, which is supported by both the literature and the data.

Green creativity, according to studies, should be viewed as an organizational endeavor that takes initiative rather than a reaction to pressure from stakeholders. The goal of these proactive measures is to gain a competitive advantage and improve environmental performance. [referencepkratzer2017open](#). According to the Resource-Based View (RBV) paradigm, innovations in green products and processes are seen as essential organizational assets that improve environmental performance and foster goodwill among stakeholders.

Furthermore, green process and product innovations contribute to better environmental outcomes while simultaneously supporting organizational social and financial performance by lowering costs associated with waste ([Yu et al., 2021](#)). These innovations are essential tools for organizations striving to improve environmental performance and foster positive relationships with stakeholders.

Results indicates in (Table 4.5). The p-value of 0.000 and confidence interval (LLCI = 0.1284, ULCI = 0.2005) confirm this significant relationship. The coefficient value of 0.1645 shows that increased creativity within teams contributes to enhanced project performance.

These results emphasize the critical role of Green creativity and knowledge in driving Green project success, consistent with prior research that underscores the value of both explicit and tacit knowledge for achieving high project performance. Product development performance is improved by accumulated organizational creativity ([Hunt and Morgan, 1995](#)).

The fourth hypothesis proposes that TGC mediates the relationship between GTL and TGPP. The bootstrapping analysis in Table 4.5 reveals significant indirect effects, with $BOOTLLCI = 0.0595$ and $BOOTULCI = 0.1496$, both positive and excluding zero, confirming that TGC acts as a mediator between GTL and TGPP. The notion of "green transformational leadership," which we provide here, is based on the definitions given by (Bass and Bass Bernard, 1985), (Gardner and Avolio, 1998), and (Chen and Chang, 2013). Leadership characteristics that motivate followers to surpass expectations and accomplish environmental goals are referred to as "green transformational leadership" in environmental performance."

Organizational creativity is a driving force for innovation and must be prioritized by organizations in order to generate new solutions (Halbesleben et al., 2003). According to research, a key factor in effective product development is team creativity, which helps create innovative and useful products (Tang and Chang, 2010). Product development performance is improved by accumulated organizational creativity (Hunt and Morgan, 1995). Superior product outcomes can be achieved by innovative product development teams with distinct inventiveness in meeting consumer needs (Deshpandé et al., 1993). Therefore, the success of new product development initiatives still depends heavily on creativity (Chang et al., 2010).

From the standpoint of the client, innovative concepts are assessed according to their uniqueness and utility (Cohen et al., 1996). Product development efforts are greatly impacted by a new product idea (Cooper, 1979). Group-level creativity that results from team interactions is known as team creativity (Pirola-Merlo and Mann, 2004), and it has a favorable impact on team performance. Team creativity is seen by organizations as an essential source of innovation (Yoon et al., 2010), which improves the performance of product development (Hultink et al., 1997).

The new term "green product development performance," which we propose in accordance with this understanding, refers to "the development performance of products that minimize environmental impact, are less harmful to human health, incorporate recycled components, are produced with energy efficiency, or are delivered with reduced packaging and it provides much to the green environment".

Green transformational leaders are instrumental in enhancing environmental performance (Andriopoulos, 2001), as organizational innovation heavily relies on their

traits and behaviors (Halbesleben et al., 2003). Such leaders inspire employees to think creatively and act innovatively, contributing to better environmental and organizational outcomes (Mittal and Dhar, 2015).

These findings underscore the importance of fostering creativity within teams, suggesting that leadership's influence on project success is largely transmitted through team green creativity.

The fifth hypothesis, which posits that TGIC moderates the relationship between GTL and TGC, was not supported by the data. The confidence interval (LLCI = -0.0658, ULCI = 0.0015) includes zero, and the p-value of 0.0611 exceeds the 0.01 significance threshold, indicating no significant moderation effect. These results suggest that while TGIC may play a role in fostering creativity, it does not significantly enhance the relationship between GTL and TGC in this context. This finding points to the possibility of more complex or indirect influences of team climate on leadership and creativity dynamics in project environments.

This research presents the idea of the Green Innovative Climate (GIC), which builds upon the framework put forth by (Scott and Bruce, 1994). GIC refers to "a set of employee perceptions about the work environment that promotes risk-taking behavior for green products and practices, allocates adequate resources, and fosters a challenging work environment to encourage green creative thinking (GCT) and innovation at the organizational level."

A great deal of scholarly research has been done on the connection between Green Transformational Leadership (GTL) and Green Creative Thinking (GCT) (Chen and Chang, 2013). According to research, GTL uses its intrinsic qualities to improve GCT in a variety of scenarios and industries (Mittal and Dhar, 2016). Additionally, leaders are essential in fostering an innovative environment by providing resources and support to encourage creativity (Jaiswal and Dhar, 2015).

For example, (Amabile and Pratt, 2016) made the case that managers need to encourage staff members to come up with new ideas, acknowledge their innovative contributions, and give them the resources and support they need to achieve

innovation goals across the organization. leaders are essential in fostering an innovative environment support to encourage creativity.(Jaiswal and Dhar, 2015).

5.3 Research Implications

5.3.1 Practical and Theoretical Implications

The practical implications of this study emphasize the importance of fostering Green Transformational Leadership (GTL) to enhance project outcomes and team performance. Organizations should develop leaders who inspire environmental responsibility and innovation, as GTL positively impacts Team Green Project Performance (TGPP). Encouraging creativity within teams is critical, as Team Green Creativity (TGC) serves as a mediator between leadership and project success. Companies can nurture this creativity by establishing a supportive environment that allows experimentation and rewards innovative ideas. Additionally, while the moderating effect of Team Green Innovative Climate (TGIC) was not significant, promoting a culture of environmental awareness and innovation remains essential. Developing leadership programs that focus on sustainability-driven leadership traits, coupled with strategies that foster knowledge sharing and collaboration, will help organizations achieve long-term project success.

Theoretically, this study extends the understanding of transformational leadership by focusing on its environmental dimension GTL highlighting its role in driving project success through creativity. The research confirms that team creativity mediates the relationship between leadership and project outcomes, adding to the literature on leadership and creativity in project management. While TGIC did not moderate the GTL and TGC relationship, the study provides insights into the complex dynamics between organizational climate and leadership-driven creativity, suggesting further exploration of this area. Additionally, this research contributes to social information processing theory by revealing how team creativity influences project performance, driven by leadership. The findings underscore

the importance of sustainability as a central theme in leadership effectiveness, especially in green, project-based organizations, offering new directions for both theoretical exploration and practical application in sustainable leadership development.

5.4 Limitations of Research

This study on the "Impact of Green Transformational Leadership on Team Green Project Performance with the Mediating Role of Team Green Creativity and Moderating Role of Team Green Innovative Climate" has several notable limitations.

1. Firstly, the research was confined to specific locations, namely Rawalpindi and Islamabad, which may restrict the applicability of the findings to other geographic areas or cultural settings.

2. The sample size and diversity present challenges as well, since the convenience sampling approach may not accurately reflect the wider population, potentially introducing bias.

3. Furthermore, the study employed a cross-sectional design, limiting its ability to examine the temporal dynamics of the relationships among the variables and failing to capture changes over time.

4. The reliance on self-reported data may also amplify response biases, as busy project team members could provide incomplete or inattentive answers.

5. Additionally, the use of basic statistical analysis tools like SPSS might restrict the examination of more intricate relationships between the variables, indicating a need for advanced analytical techniques in future studies.

6. Finally, external factors such as organizational culture and market conditions were not considered in this research, which could affect the results but were outside

the study's scope. Acknowledging these limitations underscores the importance of further research in this field to enhance understanding of the examined relationships.

5.5 Future Direction of Research

Here are the future directions for your study on the "Impact of Green Transformational Leadership on Team Green Project Performance with the Mediating Role of Team Green Creativity and Moderating Role of Team Green Innovative Climate" in point form:

- 1. Explore Diverse Leadership Styles:** Investigate the effects of various leadership styles as independent variables to broaden the understanding of their impact on project performance and creativity.

- 2. Different Units of Analysis:** Consider using different units of analysis, such as individual versus team-level outcomes, to gain more nuanced insights into the dynamics at play.

- 3. Larger Sample Sizes:** Future research can increase dependability by using larger sample sizes because they increase statistical power and decrease sampling errors. It guarantees that the results are more representative of the general population, enabling the drawing of stronger conclusions.

- 4. Longitudinal Studies:** Shift from a cross-sectional approach to longitudinal studies to observe changes over time and explore causal relationships among the variables.

- 5. Geographical Expansion:** Test the relationships in different geographical contexts, including other cities in Pakistan or internationally, to validate findings and explore cultural dimensions.

5.6 Strengths of the Research Outcome

The strengths of this research study are highlighted below:

1. The study gathered a significant sample of 385 respondents from software companies in Islamabad and Rawalpindi, which adds robustness to the collected data.
2. Utilizing SPSS for data analysis provided a dependable and effective method for examining complex relationships within the data.
3. Data was specifically obtained from team members concerning the variables of Green Transformational Leadership (GTL), Team Green Creativity (TGC), and Team Green Project Performance (TGPP), allowing for a concentrated examination of the study's key constructs.
4. The research identified Team Green Creativity as a mediating variable, emphasizing its essential role in enhancing the connection between Green Transformational Leadership and Team Green Project Performance.

5.7 Conclusion

This research represents a groundbreaking investigation into the relationship between Green Transformational Leadership (GTL) and Team Green Project Performance (TGPP) within IT organizations, with a specific focus on the mediating role of Team Green Creativity (TGC). By gathering insights from team members across various IT companies, the study amassed a substantial dataset of 385 responses, underscoring the critical role of GTL in driving project success.

The results of the study demonstrate that GTL has a positive impact on both TGC and TGPP, thereby validating the core hypothesis that this leadership style plays a significant role in enhancing project performance in IT environments. Additionally, the findings confirm that TGC serves as a mediator in the relationship between GTL and TGPP, highlighting the essential function of creativity in fostering successful project outcomes. This reinforces existing literature that

advocates for the cultivation of innovative and collaborative atmospheres within project teams, which are crucial for maximizing performance.

While the hypothesis regarding TGC as a mediator was upheld, the exploration of the moderating effect of Team Green Innovative Climate (TGIC) did not yield statistically significant results. This finding indicates that, although an innovative climate is vital for encouraging creativity and collaboration, it may not have a direct effect on the relationship between GTL and TGC in the context of this study. This insight prompts further investigation into the complexities surrounding how organizational climates influence leadership dynamics and creative processes.

Moreover, the research emphasizes the importance of fostering a green organizational culture, which goes beyond merely promoting innovation. A green organizational culture nurtures environmental consciousness among team members, encouraging them to integrate sustainable practices into their projects. By aligning GTL with a commitment to environmental responsibility, organizations can create an atmosphere that not only supports creativity but also enhances overall project performance. This approach advocates for leaders to embed sustainability values into their leadership practices, ultimately contributing to a more sustainable future for the organization and its stakeholders.

At last, this study significantly enhances the understanding of how Green Transformational Leadership influences project performance within IT organizations, providing critical insights into the relationship between leadership styles, team creativity, and project success. The findings highlight the necessity for organizations to prioritize the development of green leadership qualities and foster a culture that encourages innovation and sustainability. Future research should delve deeper into these dynamics, exploring their implications in varied contexts and with more diverse populations to further validate and expand upon these findings.

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Appendix A

Research Questionnaire

Dear respondent,

My name is Aqsa Rasheed student of MS Project Management. My topic for research is “Impact of Green Transformational Leadership on Team Green Project performance with the Mediating role of Team Green Creativity and Moderating Role of Team Green Innovative climate”. As a MS research scholar at Capital University of Science & Technology (CUST), Islamabad, you can help me in filling the attached questionnaire you will feel quite interesting or also help me in collecting data for my research thesis, I will appreciate your participation. I assure you that data collected from you will be strictly kept confidential and will only be used for academic purposes only. Please keep in mind the data will be collected a general basis not on an individual basis. Please read the instructions before filling the questionnaire. Thanks a lot for your help and support!

Sincerely,

Aqsa Rasheed

MS (Project Management) Research Scholar

Faculty of Management & Social Sciences

Capital University of Science & Technology (CUST),

Islamabad

TABLE 1: Section-1: Demographics

Gender	Male	Female			
		20-30	31-40	41-50	50-above
Qualification	Below bachelors	Bachelors	Masters above		

TABLE 2: Section-2: Green Transformational Leadership

GTL		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
01	The leader inspires the organization members with the environmental plans.	1	2	3	4	5
02	The leader provides a clear environmental vision for the members to follow.	1	2	3	4	5
03	The leader gets the organization members to work together for the same environmental goals.	1	2	3	4	5
04	The leader encourages the organization members to achieve the environmental goals.	1	2	3	4	5
05	The leader acts with considering environmental beliefs of the organization members.	1	2	3	4	5
06	The leader stimulates the organization members to think about green ideas.	1	2	3	4	5

TABLE 3: Section-3: Team Green Project Performance

TGPP		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
01	My team maintained good adherence to the green project schedule..	1	2	3	4	5
02	The Green project is completed according to the budget allocated.	1	2	3	4	5
03	The sustainable outcomes of the project are used by its intended end users.	1	2	3	4	5
04	The outcomes of the project are likely to be sustained.	1	2	3	4	5
05	The outcomes of the Green project have directly benefited the intended end users, either through increasing efficiency or effectiveness.	1	2	3	4	5
06	Given the problem for which it was developed, the green project seems to do the best job of solving that problem	1	2	3	4	5
07	I am satisfied with the process by which the Green project was implemented	1	2	3	4	5

TABLE 4: Section-4: Team Green Creativity

	TGC	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
01	The members of the green product development project suggest new ways to achieve environmental goal.	1	2	3	4	5
02	The members of the green product development project propose new green ideas to improve environmental performance.	1	2	3	4	5
03	The members of the green product development project promote and champion new green ideas to others.	1	2	3	4	5
04	The members of the green product development project develop adequate plans for the implementation of new green ideas.	1	2	3	4	5
05	The members of the green product development project would rethink new green idea.	1	2	3	4	5
06	The members of the green product development project would find out creative solutions to environmental problems.	1	2	3	4	5

TABLE 5: Section-5: Team Green Innovative Climate

	TGIC	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
01	Green creativity is encouraged here.	1	2	3	4	5
02	Around here, people are allowed to try to solve the old problems in different greenways	1	2	3	4	5
03	This organization can be described as flexible and continually adapting to green change	1	2	3	4	5
04	This organization is open and responsive to environmental change	1	2	3	4	5
05	There is adequate time available to pursue green creative ideas here	1	2	3	4	5
06	This organization gives free time to pursue green creative ideas during the workday	1	2	3	4	5
07	The reward system here encourages green innovation	1	2	3	4	5
08	This organization publicly recognizes those whose ideas are green and innovative	1	2	3	4	5