Fostering Green Creativity in the Manufacturing Sector of Pakistan: Unraveling the Nexus of Green Employee Empowerment, Psychological Green Climate, and Employee Green Commitment

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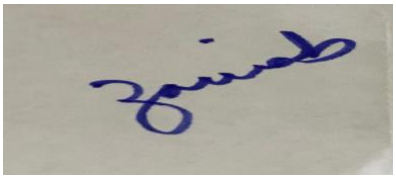

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ABSTRACT

The primary aim of the current study is to build on the social identity theory and the present literature to investigate the effect of green employee empowerment on green creativity in the manufacturing industry of Pakistan. Moreover, this study also examines the outcome of green employee empowerment on green creativity with the sequential mediating roles of psychological green climate and employee green commitment. This is a quantitative study that gathered cross-sectional data from 226 full-time knowledge-workers employed in the Pakistani manufacturing industries of oil and gas, fertilizer, and textile. The partial least squares-structural equation modeling (PLS-SEM) method was used for the purpose of analysis of this study. The outcomes of this study highlight the positive influence of green employee empowerment in predicting psychological green climate, as well as the positive effect of psychological green climate on employee green commitment. Additionally, the results showed a positive relationship between employee green commitment and green creativity. The study also revealed a sequential mediation of psychological green climate and employee green commitment in linking green employee empowerment and green creativity, as well as green employee empowerment being a significant predictor of green creativity. Although the primary goal of the study was to examine the theoretically grounded hypotheses, the study also offers several valuable implications for organizations in the manufacturing sector. According to the findings of the study, these organizations should focus on empowering employees to get involved in green initiatives in order to maximize desired green attitudes and behaviors such as psychological green climate, employee green commitment and green creativity. To the author's best knowledge, this is one the initial studies to investigate the causal relationships between green employee empowerment, psychological green climate, employee green commitment and green creativity.

Keywords: Green employee empowerment, Psychological green climate, Employee green commitment, Green creativity, Oil and gas, Textile, Fertilizer, Pakistan

CHAPTER 1: INTRODUCTION

1.1 Introduction

This chapter examines the background of the study, along with the gaps in existing literature that are relevant to the current study. Moreover, the research problem statement along with the research objectives, aims and questions are also outlined in this chapter. Additionally, the operationalization of constructs is also provided in this section, demonstrating how the study defines the constructs. The chapter concludes with a discussion of the motivation behind this research, the significance of the study, along with the structure of this thesis.

1.2 Background of the Study

For decades, the primary goal of organizations has been to produce goods and services in order to gain a financial return on their investments. For this purpose, these organizations employ four types of resources – land, labor, capital and entrepreneur (Sule & Oshi, 2022). These business processes tend to have several irreparable implications on the environment like stimulating pollution and devastating the natural ecosystem, leading to the imposition of various environmental regulations by policymakers and regulatory authorities in order to counter these environmental reparations (Li et al., 2023; Naz et al., 2023). Human Resource Management (HRM) literature is also acknowledging the need to take environmental sustainability seriously (Abbas et al., 2022), and the importance of businesses to flourish, but not at the cost of this planet. Therefore, with the increase in environmental issues, many organizations worldwide have implemented green human resource management (GHRM) to operate and manage their businesses in an effective and sustainable way.

Organizations in Pakistan are also taking small but noticeable steps towards more environmentally sustainable business models, as the country faces a major environmental crisis characterized by harmful smog levels and unprecedented floods (Khan et al., 2023). Green creativity can help these organizations reduce or even eliminate the negative implications that their operations have on the environment (Ahmed et al., 2023; Farooq & Dhir, 2022). Through green creativity, organizations

develop new and innovative green solutions regarding green practices and procedures that can help them achieve sustainability and maintain their competitiveness in the market, along with helping them deal with emerging environmental and social challenges (Bhattarai, 2023; Hassan, 2023; Lin & Chen, 2017). Additionally, green creativity plays an integral role in the development of unique green ideas that promote overall green innovation in the organization (Maitlo et al., 2022). Empirical evidence also suggests that green creativity positively impacts an organization's reputation, along with more brand equity and better overall organizational performance (Alkebsee et al., 2023). Green creativity can consist of increasing the usage of recyclable materials and renewable sources of energy in the manufacturing process, along with using Information Technology (IT) for the purpose of communication instead of printing on paper (Alyahya et al., 2023). Through this, green creativity helps organizations meet the requirements of environmental protection and preservation, and enjoy a competitive advantage both locally and globally (Taha & Abbas, 2023).

While there are several factors like green dynamic capabilities (Hassan, 2023), green transformational leadership (Al-Ghazali et al., 2022) and corporate environmental ethics (Song et al., 2023) that help promote green creativity in an organization, previous literature indicates that employee green commitment plays a fundamental role in encouraging employees to exhibit environmentally friendly behaviors like green creativity (Afridi et al., 2023; Song et al., 2023). Employees who possess significantly high levels of commitment for the environment tend to exhibit environmentally friendly behaviors like recycling and energy conservation at work (Afsar & Umrani, 2019). Moreover, employees who are highly committed towards the environment engage themselves in coming up with innovative solutions to solve environment-related problems (Afridi et al., 2023). Employee green commitment also encourages employees to generate creative ideas, along with fulfill customer needs as well as look for approaches to make the processes of the organization more environmentally sustainable (Sugiarto & Huruta, 2023). Moreover, employee green commitment inspires enthusiasm and gives a sense of belonging to these employees which inspires them to find innovative green solutions in order to improve the overall organizational green capabilities (Hussain & Afzal, 2023). Furthermore, higher levels of commitment towards the organization also encourages employees to participate in voluntary green initiatives. Employee green commitment is characterized by a strong belief in the environmental

goals of the organization, which creates a strong desire by the employee to exert considerable effort towards these goals, including voluntary initiatives that are not a part of their formal job description (Nurfitriyana & Uii, 2023).

Psychological green climate is a key predictor of employee commitment levels regarding the environment. The psychological green climate of an organization can be defined as "the shared perception of the employees concerning organizational procedures and policies that enhance environmentally friendly attitudes" (Afridi et al., 2023, p. 6). Previous research indicates that the psychological climate of an organization significantly impacts employee behaviors, and by fostering a positive psychological green climate, the management of an organization tries to induce pro-environmental awareness among the employees, and attempts to transform their mindsets to engage in more pro-environmental behaviors (Keles et al., 2023; Naz et al., 2023). Moreover, a positive psychological green climate leads to the internalization of the environmental values of the organization in its employees, which encourages them to follow the organization's environmental sustainability guidelines and regulations (Sabokro et al., 2021). The psychological green climate of an organization also provides an atmosphere that helps employees alter their norms and beliefs according to the green goals of the organization, which encourages them to get engaged in the environmental initiatives carried out by the organization. This active participation strengthens their green knowledge, consequently enhancing their commitment towards the environment (Afridi et al., 2023).

A significant GHRM practice, green employee empowerment plays a major role in assisting organizations reach their environmental objectives by encouraging employee participation in the company's green initiatives and motivating and supporting employees to take on greater responsibility in decision-making (Ashraful et al., 2021; Tuan, 2019). Previous research has established that an organization's green initiatives have a significant positive impact on its psychological green climate. Additionally, previous studies on organizational psychology indicate that empowering employees positively impacts the psychological environment by strengthening supervisor-subordinate relationships (Amrutha & Geetha, 2023; Daily et al., 2012). Providing employees with the freedom to express themselves at work fosters an environment where the employees feel empowered to give suggestion on how to make the organization's procedures

better. The psychological green climate of the organization therefore tends to be higher when employees are empowered to engage in the green initiatives of the organization and given the appropriate channels to carry out these initiatives.

Moreover, green employee empowerment also involves the strengthening of employee green skills, enhancing their environmental knowledge and incentivizing them to support the organization fulfill its green goals (Ashraful et al., 2021). Empowered employees tend to feel more comfortable with a greater sense of control. This encourages them to engage more in environmental management which can prove to be critical in enhancing the efficiency of the organization's environmental initiatives (Rahman & Mansor, 2023). By sharing the organization's green goals and environmental plans with employees, green employee empowerment helps facilitate a green organizational culture by developing employee green competence and self-determination which in turn promotes green performance (Amrutha & Geetha, 2023). The employees of an organization are known to be the most valuable asset, and the most integral one in helping an organization build and sustain a competitive advantage. Hence, it is very important for organizations to empower their employees and involve them in green strategy formulation and implementation.

1.3 Problem Statement

Climate change and global warming are pertinent issues all over the world, including Pakistan. Pakistan is an emerging economy, and while it currently only contributes 0.4 percent to the global CO2 emissions, this number is constantly increasing (Malik et al., 2021). The manufacturing sector is considered to be the most important contributor of these environmental hazards in Pakistan (Malik et al., 2021). Since the manufacturing sector produces the highest amount of waste among all sectors in Pakistan, there is an immense amount of pressure from stakeholders to undertake green initiatives (K., 2023; Malik et al., 2021). The organizations in the manufacturing sector are also facing serious regulations in order to curtail their carbon footprint, due to which these organizations have started setting up formal mechanisms like GHRM (Mubashir et al., 2022). Since the manufacturing sector is the prime contributor of these

environmental problems, it has become very important for these companies to promote the idea of sustainable performance (Ahmad & Khan, 2022).

Studies have shown that the human resource department of organizations play an integral role in shaping the organizational culture (Singh et al., 2020). GHRM initiatives like green employee empowerment can be integral in improving employee perceptions about the organization environmental stewardship, as well as in boosting their green commitment, leading to more sustainable and environmentally-friendly practices in the organization (Afsar & Umrani, 2020; Shakil et al., 2023). However, K (2023) demonstrated that the connection between GHRM initiatives like green employee empowerment and employee green outcomes like green creativity is complex, and hence necessitates additional investigation. Previous studies have examined that the influence of HRM practices on employee behaviors does not happen directly and occurs through various psychological and social procedures (Jiang et al., 2012). Hence, there is an urgent need to determine the underlying processes behind the link between green employee empowerment and green creativity (Afsar & Umrani, 2019; Saeed et al., 2018). The psychological green climate of an organization and employee green commitment are prominent factors that impact employee green behaviors (K., 2023; Norton et al., 2014), yet have received little to no attention in ascertaining the connection between green employee empowerment and green creativity. Thus, the current study is timely in addressing these issues.

1.4 Research Gaps

Extensive studies have previously been carried out in the field of GHRM as well as on the variables that will be studied through this research. However, most of the previous work in this specific field has primarily laid emphasis on dimensions of GHRM like green recruitment (Jamil et al., 2023; Mwita & Kinemo, 2018), green training (Deshpande & Srivastava, 2023), green performance management (Amjad et al., 2021) and green compensation (Ardiza et al., 2021), and there is insufficient empirical data to support the claim that green employee empowerment which is a relatively new dimension of GHRM encourages environmentally conscious behavior among employees (Amrutha & Geetha, 2023). Moreover, GHRM research has not given sufficient attention to the mechanisms underlying green creativity (Ardiza et al., 2021). While past research

confirms that green employee empowerment influences green behaviors like green employee performance (Adi et al., 2021) and green organizational citizenship behaviour (GOCB) (Amrutha & Geetha, 2023), the impact on green creativity is yet to be demonstrated. This study aims to fill this gap.

Previous studies have observed that the impact of GHRM initiatives on green creativity involves several social and psychological processes (Jiang et al., 2012). Saeed et al. (2018) and K (2023) have suggested the need to test the mediating roles of psychological and personal factors in order to understand the underlying relationship between GHRM initiaves and employee behaviours. While studies have confirmed the mediating roles of constructs like green mindset (Shakil et al., 2023) and pro-environmental behaviors (Ahmad et al., 2021) between GHRM initiatives and green creativity, the mediation of psychological green climate between this relationship has rarely been examined previously. However, the sequential mediating roles of psychological green climate and employee green commitment between GHRM and green employee behaviors has been confirmed previously by K (2023). Moroever, Afridi et al. (2023) have also tested the sequential mediating roles of psychological green climate and employee green commitment between generative leadership and green creativity, hence partially validating our proposed model. However, the literature still lacks sufficient empirical support focusing on the impact of green employee empowerment on green creativity with these mediators. Thus, this study aims to address this research gap by positioning psychological green climate and employee green commitment as sequential mediators between green employee empowerment and psychological green climate.

Additionally, previous studies on green employee empowerment have been conducted in industries such as the banking industry (Sule & Oshi, 2022) and dairy industry (Ansari et al., 2022). Moreover, GHRM has also been previously extensively studied in the context of banks (Anjum et al., 2022; Ogalo et al., 2020), healthcare (Das & Dash, 2023; Kumar & Chakraborty, 2022) and automotive industry (Kumar et al., 2022). However, previous research has revealed that GHRM initiatives need to be studied in the context of the manufacturing sector in greater detail in order to under the impact they tend to have on employee green behaviors (Sabokro et al., 2021; Yong et al., 2019). Given this, the current study aims to examine the impact of green employee

empowerment on green creativity in the manufacturing sector of Pakistan, focusing on three industries: oil and gas, textile and fertilizer.

1.5 Research Aims

This study intends to contribute to the literature on green employee empowerment by investigating certain potential employee green outcomes of green employee empowerment in the context of the manufacturing sector, providing us with a better understanding of the concept of green employee empowerment and its implications. Given the importance of the manufacturing industry to the Pakistan economy (Saleh, 2015), it is critical to assess green employee empowerment and its implications on these organizations and their employees. Additionally, being in the context of the manufacturing sector, this study aims to make a valuable contribution because these organizations are environmentally sensitive in nature and encourage employee pro-environmental behaviors (Chen et al., 2021). Moreover, green employee empowerment is an emerging topic in GHRM literature, yet it has not been adequately investigated in terms of its relationship with employee behaviors (Amrutha & Geetha, 2023). Lastly, this research also aims to contribute to the literature on employee psychological processes in the context of GHRM by investigating the impact of green employee empowerment on two employee psychological processes i.e., psychological green climate and employee green commitment, and how these psychological processes influence green creativity in an organization. Overall, this study seeks to provide valuable insights into the linkage between green employee empowerment, psychological green climate, employee green commitment and employee green behaviors in promoting a greener work environment for organizations operating in the manufacturing sector of Pakistan.

1.6 Research Objectives

This study aims to investigate the causal relationships between green employee empowerment, psychological green climate, employee green commitment and green creativity in the manufacturing sector of Pakistan, focusing on three major industries; oil and gas, textile and fertilizer. Therefore, the objectives of the research are as follows:

1. To examine the link between green employee empowerment and psychological green climate in the manufacturing sector
2. To examine the link between psychological green climate and employee green commitment in the manufacturing sector
3. To examine the link between employee green commitment and green creativity in the manufacturing sector
4. To examine the link between green employee empowerment and green creativity in the manufacturing sector
5. To investigate the sequential mediating role of psychological green climate and employee green commitment on the link of green employee empowerment and green creativity in the manufacturing sector

1.7 Research Questions

Following are the research questions that have been addressed in order to achieve the research objectives of this study:

1. Does green employee empowerment have an impact on psychological green climate in the manufacturing sector?
2. Does psychological green climate have an impact on employee green commitment in the manufacturing sector?
3. Does employee green commitment have an impact on green creativity in the manufacturing sector?
4. Does green employee empowerment have an impact on green creativity in the manufacturing sector?
5. Do psychological green climate and employee green commitment sequentially mediate the relationship between green employee commitment and green creativity in the manufacturing sector?

1.8 Operational Definitions

1.8.1 Green Employee Empowerment

Green employee empowerment can be defined as “the collective perception of employees regarding information sharing, supervisor support, and employee recognition, forming awareness and employee involvement in pursuance of green tasks” (Tariq et al., 2016, p. 243).

1.8.2 Psychological Green Climate

Psychological green climate can be defined as “the perception of an individual regarding an organization’s pro-environmental policies, processes and practices that reflect its green values” (Uslu et al., 2023, p. 5).

1.8.3 Employee Green Commitment

Employee green commitment can be defined as “an emotional state of mind that encompasses attachment, identification, responsibility for environmental concern in the workplace” (Paillé et al., 2019, p.731).

1.8.4 Green Creativity

Green creativity can be defined as “the development and implementation of new products and processes that contribute to sustainable environment” (Taha & Abbas, 2023, p. 20).

1.9 Significance of the study

This investigation is significant as it aims to broaden the knowledge on green employee empowerment as well as its outcomes like psychological green climate, employee green commitment and employee creativity. The human resource department can prove to be integral in helping an organization shape its green values, and carry out its green practices effectively. Employees are helping their organizations generate innovative environmental solutions, along with producing environmentally-safe merchandise (Asad et al., 2022). This green creative behavior displayed by the employees increases the overall green performance of the organizations. Research shows that organizations that have adopted green HR initiatives and those that empower

their employees to participate in the organization's green initiatives not only perform well on the corporate social responsibility and sustainability end, but also perform well financially (Ansari et al., 2022). Moreover, this investigation is significant because GHRM literature has paid significantly less attention to green employee empowerment in comparison to the other dimensions of GHRM like green training and green performance management (Amrutha & Geetha, 2023). Additionally, the study presents an empirically tested model clarifying the underlying mechanisms of psychological green climate and employee green commitment between green employee empowerment and green creativity. Hence given the significance of this subject, this research seeks to investigate the relationship between green employee empowerment and green creativity with the sequential mediation of psychological green climate and employee green commitment in the manufacturing sector of Pakistan.

1.10 Motivation for Research

Being a significant contributor to global environmental repercussion, the manufacturing sector has gathered a significant amount of attention due to its potential to mitigate these environmental implications by implementing green organizational practices like GHRM (Renwick et al., 2013). GHRM initiatives like green employee empowerment carried out on behalf of the organization indicate that the organization is putting in the necessary effort and is taking sustainability seriously which can in turn lead to a positive psychological green climate, along with greater employee green commitment and green creativity (González et al., 2019).

The manufacturing sector of Pakistan contributes significantly to the economic development of the country by employing approximately 25 percent of the country's total population and contributing approximately 18 percent towards the country's total GDP (Pro Quality Control International, 2022). However, due to this rapid industrialization, Pakistan is facing serious environmental implications, which necessitate an urgent shift towards organizational practices that are sustainable such as GHRM (Shahzad et al., 2020). Empowering employees to participate in green initiatives has proven to significantly enhance environmental sustainability within the organization (Amjad et al., 2021). These organizations can leverage their employees by involving

them in decision-making regarding environmental initiatives as well as by fostering an organizational culture that promotes environmental accountability (Bhatti et al., 2022).

The present study holds significant potential to offer concrete knowledge to manufacturing sector organizations in Pakistan by offering empirical insights that can help with policy-making which can lead to better environmental performance. Firstly, the findings of this study can function as a roadmap for manufacturing organization in Pakistan that aim to become more sustainable by developing green employee empowerment strategies to address environmental challenges (Jehan et al., 2020). Moreover, empowering employees to engage in green initiatives can help these manufacturing organizations gain a competitive advantage by enhancing their reputation and attracting environmentally conscious customers, ultimately establishing their presence in emerging green markets (Jamal et al., 2021).

Lastly, by empowering employees and including them in decision making regarding the organization's green initiatives, these organizations belonging to the manufacturing industry can help optimize their processes by reducing raw material wastage and shifting to renewable energy methods which can help them save production costs in the long run (Gill et al., 2021). In conclusion, by generating actionable insights on green employee empowerment, psychological green climate, employee green commitment and green creativity, the present study can assist the manufacturing sector organizations of Pakistan in navigating environmental challenges, driving innovation, and accomplishing their sustainability goals.

1.11 Outline of Thesis

Chapter 1: Introduction

The first chapter of this study presents an introduction to the topic, along with the significance of the topic and why it is imperative to be researched. The chapter also includes the research problem statement, gaps, aims, objectives, questions and contribution.

Chapter 2: Literature Review

The second chapter of this research presents evidence from previous studies conducted by

various researchers. Furthermore, it includes a discussion of the theories used in this study, as well as a detailed hypotheses development section.

Chapter 3: Research Methodology

This chapter focuses on the research techniques used in the study, as well as the software used to conduct the analysis. This chapter also contains information about the instruments and data being used in the study.

Chapter 4: Results

This chapter provides an overview of the study's findings.

Chapter 5: Discussion and conclusion

This chapter provides a thorough explanation and justification of the results of the study. Additionally, the theoretical as well as the practical contributions of the study are also provided in this chapter. The final part contains the conclusion.

1.12 Summary of the Chapter

This chapter served as an introduction to the study. It offered an introduction to the variables involved in the study, as well as the causal relationships that will be investigated. This chapter also includes the research problem statement, as well as an overview of previous research conducted on this topic that assisted us in determining the research gaps. This section also includes the research objectives, aims and questions along with the motivation and significance of the study. Additionally, the operationalization of constructs is also provided in this section, demonstrating how the study defines the constructs. The chapter concludes with a layout of the structure this study will follow.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

To acquire a better understanding, this chapter presents an in-depth review of all variables involved in the study. The chapter starts with a detailed discussion on the literature of green employee empowerment, psychological green climate, employee green commitment and green creativity. This includes an overview of the previously published research on these topics as well as the definitions of the constructs. A thorough explanation of the theory this study employs is presented afterwards, along with a section on developing hypotheses. The chapter concludes with the conceptual model and the hypotheses table.

2.2 Definition of key concepts

This study investigates the causal relationships between green employee empowerment, psychological green climate, employee green commitment and green creativity. However, prior to hypothesizing any relationships, the key concepts must be further explained. Therefore, in order provide a comprehensive understanding of the topics operationalized in the study, the following section describes green employee empowerment, psychological green climate, employee green commitment and green creativity based on previous literature.

2.2.1 Green Employee Empowerment

Tariq et al. (2016) defines green employee empowerment as "the collective perception of employees regarding information sharing, supervisor support, and employee recognition, forming awareness and employee involvement in pursuance of green tasks" (p. 243). Green employee empowerment is an integral part of green management (Ahmad & Khan, 2022). Employee empowerment plays an crucial role in assisting an organization reach its goals, and when the employees are empowered to pursue green initiatives, it is labeled as green employee empowerment (Tariq et al., 2016). Green employee empowerment involves various activities that tend to impact the job satisfaction levels of employees (Hutomo et al., 2020).

Empowering employees can be approached through different ways like job enlargement and job enrichment (Sule & Oshi, 2022). Green employee empowerment is the vision of an organization that guides its employees towards eco-initiatives, along with providing the employees with the right channels to embed these green initiatives in the overall organizational culture (Tang et al., 2018). Ashraful et al. (2021) established that green employee empowerment positively impacts an organization's overall environmental performance as green employee empowerment increases the perceived environmental decision-making autonomy of employees which leads to better environmental performance by the employee.

Moreover, studies have revealed that green employee empowerment positively impacts employee attitudes like happiness, morality, loyalty and sustainably which results in higher employee dedication and green commitment (Khalid et al., 2021). Through green employee empowerment, employees are given the opportunity to voice out their opinions and participate in the decision making process related to the organization's sustainability pursuits (Zaki & Norazman, 2019). Green employee empowerment also acts as an encouragement for employees to be more proactive and look into alternative technologies to provide innovative green solutions that can aid these organizations gain a competitive advantage to outsmart their competitors on the environmental front (Sule & Oshi, 2022).

2.2.2 Psychological Green Climate

Psychological climate is how an individual employee perceives their work environment (Baltes et al., 2009). Psychological green climate can be described as the shared sense of environmental well-being in an organization (Chatelain et al., 2018). According to Chatelain et al. (2018), green human resource practices have a positive impact on the psychological green climate of an organization. The concept of psychological green climate was conceptualized by Norton and focused on the perceptions and attitudes regarding the environmental sustainability of an organization (Norton et al., 2017). Uslu et al. (2023, p.5) defined psychological green climate as "the perception of an individual regarding an organization's pro-environmental policies, processes and practices that reflect its green values". Moreover, according to Bhutto et al. (2021, p.7),

psychological green climate "represents the extent of organizational focus on the environmental and ecological outcomes of their activities".

GHRM practices such as "green recruitment and selection", "green training", "green performance management system" and "green payment and rewards" play a strong role in shaping a positive psychological green climate of an organization (K., 2023; Keles et al., 2023; Naz et al., 2021). Previous research indicates that positive psychological green climate of an organization encourages both in-role as well as the extra-role green employee behaviors (Naz et al., 2021). Psychological green climate is also a significant predictor of employee green commitment and green creativity (Afridi et al., 2023; Alyahya et al., 2023). A positive psychological green climate ultimately triggers voluntary pro-environmental behavior within the organization (Darmandieu et al., 2022).

2.2.3 Employee Green Commitment

Employee commitment can be defined as the degree to which employees are devoted towards their organization and the degree of attachment the employees feel towards their organization (Akintayo, 2010; Ongori, 2007; Sultan et al., 2023). Organizations value high employee commitment as it results in more loyal and hardworking employees, leading to better performance and the fulfillment of organizational goals (Cahyani, 2020; Sanjaya & Indrawati, 2023). There is substantial empirical evidence suggesting that employee performance can be significantly optimized by employee commitment since committed employees tend to display more professionalism, resulting in better task accomplishment (Azmy, 2023; Herrera & De Las Heras-Rosas, 2021; Liasidou et al., 2023).

Green commitment differs from general employee commitment as it is specifically focused towards environmental management in order to exhibit green behaviors (Paillé et al., 2014). Green commitment can be described as "the consistent behavior of individuals facing green issues" (Shie et al., 2022, p. 4). There are different dimensions of green commitment like top management's green commitment, organization's green commitment and employee's green commitment. However, for this study, our primary focus will be on employee's green commitment. Employee

green commitment is explained as “an emotional state of mind that encompasses attachment, identification, responsibility for environmental concern in the workplace” (Paillé & Morelos, 2019, p. 731).

Studies have shown GHRM practices, and spiritual leadership to be a strong predictors of employee green commitment (Hussain & Afzal, 2023; Suleman et al., 2023). Previous studies demonstrate that employee green commitment positively impacts employee green behavior (K., 2023; Nasir et al., 2023; Waqas et al., 2021) and green creativity (Sugiarto & Huruta, 2023). Moreover, Ahmad et al. (2023) identified that green employee involvement, GHRM, green competence-building and green motivation-enhancing practices positively influence employee green commitment. Employee green commitment has shown to promote green creativity in the organization as committed employees tend to expand their green knowledge and skills which results in more green innovative work behavior displayed by these employees (Hussain & Afzal, 2023; Sugiarto & Huruta, 2023). Literature shows that employee green commitment tends to significantly impact an employee’s environment knowledge resulting in the exhibition of green employee behavior (Harasudha & N., 2021).

2.2.4 Green Creativity

Creativity can be described as the creation and generation of fresh and original ideas or resolutions for a specific process or problem (Hou et al., 2023). Green creativity is different from general creative work behavior as it specifically focuses on ideas that help safeguard and preserve the environment (Karatepe et al., 2020). According to Taha & Abbas (2023, p.20), green creativity can be defined as “the development and implementation of new products and processes that contribute to sustainable environment”. There are several behaviors that can contribute to green creativity in an organization e.g., the use of recyclable products in the production process, using IT and other electronic systems instead of paper for communication and documentation purposes, and shifting to the renewable sources of energy like solar power (Alyahya et al., 2023).

Previous research has pointed out that green creativity has a crucial role in helping organizations grow, along with gain and sustain their competitive advantage (Stern, 2000). Moreover, research

also indicates that GHRM practices like green training, employee green commitment and employee job satisfaction are strong predictors of green creativity (Sugiarto & Huruta, 2023). Leadership styles like green transformational leadership (Maitlo et al., 2022; Sidney et al., 2022), environmentally-specific empowering leadership (Badar et al., 2023), and spiritual leadership (Hussain & Afzal, 2023) also enhance the green creativity levels of employees and motivates them to exhibit innovative solutions for the organization's environmental problems. Additionally, the perceived value of green creativity which is the value that employees derive from green creativity like positive feelings, self-interest, building self-image and goal-achievement also motivates employees to participate in green creativity (Liu et al., 2022). Green creativity is emerging as a significant construct as more and more organizations are shifting their focus towards corporate social responsibility and pro-environmental initiatives (Taha & Abbas, 2023).

2.3 Social Identity Theory

This study utilizes the social identity theory, which can be described as one's "knowledge that (they) belong to certain social groups together with some emotional and value significance to (them) of this group membership" (Tajfel, 1972, p. 292). The basic beliefs of the social identity theory are (self-) categorizing i.e., people tend to categorize themselves and others as in-group and out-group members based on attributes like gender, age or profession (K., 2023; Norton et al., 2014). The social identity theory was first extended from social psychology to an organizational context by Ashforth & Mael (1989) who propositioned that individuals develop a sense of organizational identity based on their affiliation with the organization. This becomes an important part of the employees' personality and influences their attitudes and behaviors within the organization by forming a feeling of inclusion and membership (Ashforth et al., 2008). Moreover, a favorable organizational identity tends to encourage employees to view the success as well as the failure of the organization as their own (Bailey et al., 2016; K., 2023)

With regard to the GHRM framework, studies have extensively utilized the social identity theory in the organizational context (K., 2023; Khan et al., 2023; Merlin & Chen, 2022). Based on this theory, employees prefer to identify with organizations that are "green" or "environmentally friendly" (Paillé & Morelos, 2019). When employees connect themselves with organizations that

are environmentally-friendly, they are likely to share and experience positive self-esteem (Merlin & Chen, 2022). Additionally, when employees observe that their organization is focused about the larger interest of the environment, they tend to strongly identify themselves with the environmentally-conscious organization, and therefore engage in attitudes and behaviors that could help their organization achieve their green goals (Ahmad et al., 2022; Gond et al., 2017; Rejeki & Putra, 2024).

The social identity theory also explains the value correspondence between employees and environmentally responsible organizations, and assumes that employees desire to be linked to these organizations (Chaudhary, 2019; Hu et al., 2020). Therefore, GHRM initiatives like green employee empowerment may help differentiate these organizations from others, in turn enhancing the psychological green climate. These green employee empowerment initiatives can include providing opportunities for employees to recommend and implement green practices along with participate in decision-making processes related to the organization's pro-environmental initiatives. Implementing these green employee empowerment initiatives tends to improve the public image of the organization as environmentally conscious, which also enhances the self-esteem of employees, in turn leading to a greater sense of identification with the organization (K., 2023; Khan et al., 2023; Merlin & Chen, 2022).

As per the social identity theory, GHRM initiatives like green employee empowerment tend to enhance employees' perception and appreciation of the organization's green goals, which thereby increases psychological green climate (Zhu et al., 2021). When organizations foster a psychological green climate, employees are likely to perceive environmental sustainability as significant to their identity. As per the social identity theory, employees feel an urgency to participate in pro-environmental initiatives in order to psychologically align themselves with the corporate environmental strategy of their organization e.g., if the company has a specific pro-environmental milestone to achieve, a socially-identified employee will perform a strong role in helping the organization achieve the goal (Song et al., 2023).

Furthermore, the social identity theory explains that positive perceptions about the organizational green climate enhance organizational identification, resulting in a desire to maintain group

membership and positive identity, which also translates into higher green commitment levels (Paruzel et al., 2020). Building on the social identity theory, when employees perceive their organizations to be pro-environmental, they tend to feel a strong sense of identity with their organization's green goals and values, and thus are highly prone to exhibit stronger commitment towards those goals, which also accelerates their in-role as well as extra-role behaviors (Kim et al., 2019).

The social identity theory asserts that an employee's commitment towards the environment will increase when the employee perceives and recognizes that the strategy and actions of their organization are pro-environmental (K., 2023). Employees may exhibit this commitment in a variety of ways such as by demonstrating green creativity at work. These employees feel a strong sense of identity with their organization's green initiatives, and are more likely to engage in the generation of innovative solutions as well as problem-solving to help the organization fulfill its green goals (Ostroff & Bowen, 2015).

In conclusion, the social identity theory provides a background and a structure to this study in order to help understand how employees identify with their organization's green goals and feel empowered to contribute to these goals while working in organizational climate that prioritizes sustainability. The current study suggests that these relationships will eventually increase employee green commitment, resulting in employees demonstrating greater green creativity at work.

2.4 Past Studies

Literature pertinent to this study has been summarized in Table 1. The present study is grounded on the social identity theory and conducted in the manufacturing sector of Pakistan, compared to previous studies that have been conducted in the hospitality and tourism sectors by Afridi et al. (2023) and Bhutto et al. (2021). The current study also adopts a quantitative approach similar to previous studies conducted by Sugiarto & Huruta (2023) and Alyahya et al. (2023). Moreover, while previous studies have utilized psychological green climate and employee green commitment as sequential mediators between GHRM and employee green behaviour (K., 2023)

and between generative leadership and green creativity (Afridi et al., 2023), the current study will be examining this sequential mediating mechanism between generative leadership and green creativity.

Table 1 Summary of Literature

Author	Title	Year	Country	Methodology	Variables
Amrutha & Geetha	Green employee empowerment for environmental organization citizenship behavior: a moderated parallel mediation model	2023	India	Quantitative	IV: Green employee empowerment Mediators: Employee. environmental commitment and green job satisfaction Moderator: Individual green values DV: Green OCB
Jnaneswar	Green HRM and employee green behavior in the manufacturing firms: do psychological green climate and employee green commitment matter?	2023	India	Quantitative	IV: Green HRM Mediators: Psychological green climate and employee green commitment DV: Employee green behaviours
Afridi et al	Bridging Generative Leadership and Green Creativity: Unpacking the Role of Psychological Green Climate and Green Commitment in the Hospitality Industry	2023	Pakistan	Quantitative	IV: Generative leadership Mediators: Psychological green climate and green commitment DV: Green creativity
Sugiarto & Huruta	Antecedents of green creativity: the mediating role of employee green	2023	Indonesia	Quantitative	IV: GHRM Mediators: Employee green commitment and

	commitment and employee job satisfaction				employee job satisfaction DV: Green creativity
Bhutto et al	Green inclusive leadership and green creativity in the tourism and hospitality sector: serial mediation of green psychological climate and work engagement	2021	Pakistan	Quantitative	IV: Green inclusive leadership Mediators: psychological green climate and work engagement DV: green creativity
Alyahya et al	The Antecedents of Hotels' Green Creativity: The Role of Green HRM, Environmentally Specific Servant Leadership, and Psychological Green Climate	2023	Saudi Arabia	Quantitative	IV: Green HRM, Environmentally Specific servant leadership and psychological green climate DV: Green creativity

2.5 Hypotheses Development

2.5.1 Green employee empowerment and psychological green climate

Previous research has concluded that an organization's green initiatives have a significant positive impact on its psychological green climate. Naz et al. (2023) postulated the importance of GHRM initiatives like "green hiring", "green training" and, "green performance management and compensation" in enhancing the psychological green climate in an organization. Moreover, Li et al. (2023) observed in the context of private hospitals in Pakistan that GHRM initiatives improve the overall environmental performance of the organization by developing psychological green climate. Another type of green initiative taken by organizations is green transformational leadership style which has also shown to be a significant contributor of psychological green climate in an organization (Fatoki, 2023). Additionally, Afridi et al. (2023) have also confirmed that generative leadership is a significant predictor of psychological green climate.

Green employee empowerment is a significant dimension of GHRM. While the impact of empowerment on employee performance has not been completely confirmed, the research on organizational psychology argues that empowering employees positively impacts the psychological environment by strengthening supervisor-subordinate relationships which is aided by information, knowledge and power sharing (Amrutha & Geetha, 2023; Daily et al., 2012). Empowering employees helps create an organizational climate where employees come up with their own ideas on how to improve the processes of the organization. Hence, when employees are guided towards the environmental initiatives of the organization and are provided with the right channels to execute these initiatives, their overall perceptions regarding the sense of green wellbeing of their organization tends to be elevated. Despite, green employee empowerment and psychological green climate being topics of key significance in GHRM literature, there is still lack of empirical evidence exhibiting how empowering employees to participate in the organization's green initiatives impacts the psychological green climate of the organization. Hence, we hypothesize:

H1. Green employee empowerment has a positive effect on psychological green climate

2.5.2 Psychological green climate and employee green commitment

Previous studies have demonstrated that the psychological climate in an organization is positively associated with employee commitment levels (Biswas, 2010; Langkamer & Ervin, 2008; Naami & Nezhad, 2009). According to Hemmelgarn et al. (2006), the psychological climate of an organization comprises of several dimensions i.e., "trust", "autonomy", "cohesion", "pressure", "support", "recognition", "fairness" and "innovation" which have a significant effect on employee commitment. The psychological climate of an organization is dependent on several factors like leadership style that help create a conducive environment along with facilitating the interests of both the organization and its employees which in turn helps enhance the employee commitment levels (Kawiana et al., 2021). Several studies have demonstrated a positive association between psychological climate and different dimensions of employee commitment. For example, Reddy & Reddy (2017) demonstrated the psychological climate - affective commitment relationship in the context of Indian private banks. Likewise, Munyaka et al. (2017) verified that the psychological

climate of an organization is a strong predictor of team commitment in the context of South African manufacturing firms. Recently, Uraon & Gupta (2020) concluded through their research findings that individuals who had high perceptions of their work environment were likely to have high levels of affective commitment.

Psychological green climate is the shared perception of employees regarding the organization's environmental policies and procedures, while employee green commitment can be defined as an employee's intrinsic motivation towards the preservation of the environment (Afridi et al., 2023). Previous research indicates that organizations that are green-oriented tend to provide an organizational climate that motivates employees to alter their norms and perceptions in order to align themselves with the green goals of the organization (Pinzone et al., 2016). When employees actively participate in the organization's green initiatives, their knowledge about the organization's green goals and policies is enhanced, also resulting in an increase in their accountability and commitment towards the environment (Afridi et al., 2023; Jabbour & Santos, 2008). Therefore, we postulate the following:

H2. Psychological green climate has a positive effect on employee green commitment

2.5.3 Employee green commitment and green creativity

Previous literature confirms a positive relationship between employee commitment and employee creativity (Khalilzadeh et al., 2023). An employee's commitment confirms an emotional relationship with the organizational goals which plays an integral role in the generation of new ideas (Noerchoidah et al., 2023). Higher commitment levels also indicate that an employee has a strong belief and acknowledges the organization's objectives and values. This leads them to display a significant amount of effort on behalf of the organization, which is often done by the generation of novel and creative solutions for the organization's problems by these employees (Alfaris & Zakiy, 2021; Arifin & Hidayat, 2023). Employees who display high levels of commitment towards the environment perform an adequate amount of green creativity (Hussain & Afzal, 2023; Suasana & Ekawati, 2018; Sugiarto & Huruta, 2023). Moreover, Song et al. (2023) confirmed that when organizations encourage their employees to improve their environmental

commitment levels, both the incremental as well as radical creativity levels of these employees is also increased.

Previous research also confirms that employee green commitment significantly positively mediates the relationship between psychological green climate and green creativity as higher levels of environmental commitment tends to engage employees in devising innovative solutions regarding waste management and recycling in order to address the organization's environmental problems (Afridi et al., 2023; Vallaster, 2017). Additionally, research indicates that employees who are eco-committed tend to stive to bring green innovation into the organizational processes and products (Mushtaq et al., 2019). Previous research in context of the textile sector also verifies that employee green commitment is a key predictor of green creativity (Sharma et al., 2021). Hence, we hypothesize:

H3. Employee green commitment has a positive effect on green creativity

2.5.4 Green employee empowerment and green creativity

Empowering employees has proven to increase employee self-confidence which encourages creativity (Hirmawan et al., 2023; Khan et al., 2019). Moreover, empowered employees tend to carry their responsibilities more volitionally due to the attachment they have with the organization, and have shown to generate innovative ideas to accomplish their tasks (Gyamerah et al., 2022). When employees have trust in their ability and hold a certain range of autonomy at work, they tend to disclose extra creativity by focusing on idea generation and solution-oriented results (Mubarak & Noor, 2018). Additionally, when employees feel empowered, they feel obliged to pay back to the organization and dedicate their physical and cognitive resources to generate creative solutions for the organization (Nawaz et al., 2014).

Previous research shows that green HR initiatives like psychological empowerment improve green creativity (Hawari et al., 2021; Malik et al., 2021; Perényi et al., 2023). Additionally, Ahmad et al. (2021) elaborated that green HR initiatives like "green recruitment", "green training and development", along with "green performance management and compensation" help shape

employee attitudes which eventually lead to employees exhibiting creativity while fulfilling the organizational green goals, along with coming up with an innovative portfolio of environmentally-friendly products and services. Hence, it is hypothesized:

H4. Green employee empowerment has a positive effect on green creativity

2.5.5 Sequential mediation of psychological green climate and employee green commitment between green employee empowerment and green creativity

Previous research has confirmed a partial sequential mediation of psychological green climate and employee green commitment in the link between green HRM and employee green behaviours (K., 2023). Additionally, Afridi et al. (2023) also established a sequential mediation of psychological green climate and employee green commitment between generative leadership and green creativity. Green HR initiatives like "green hiring", "green training", "green performance management and compensation" have a positive association with psychological green climate. When the context of a workplace encourages its employees to participate in green initiatives, an effective change is brought about in the form of psychological green climate (Naz et al., 2023). Similarly, Nisar et al. (2021) also presented through their research on Malaysian green hotels that when a workplace encourages its employees to seek knowledge about the organization's green initiatives, a psychologically green climate is created. Moreover, the psychological climate of an organization influences the organizational commitment levels of employees (Dr et al., 2005). When individuals perceive their organization to be committed towards sustainability for the environment, their commitment for working towards the organization's green initiatives also increases. In other words, when there is a shared sense of environmental wellbeing in the organization, the employees are committed to work towards their organization's green ambitions and objectives.

When employees are committed towards the environment, it tends to create a significant impact on their environmental behavior (Raineri & Paillé, 2016). Evidence suggests that organizational effective commitment significantly enhances employee creativity as these employees are likely to generate and champion innovative ideas in order to fulfill the organization's green goals (Odoardi

et al., 2019). Likewise, Sugiarto & Huruta (2023) established that employee green commitment positively impacts green creativity. When employees are committed towards the organization's green initiatives, they tend to look for innovative green solutions to run business operations and meet customer needs (Sugiarto & Huruta, 2023). Additionally, Song et al. (2023) concluded through their research in the Chinese context that employees who are committed towards the environment displayed high levels of green creativity. Suasana & Ekawati (2018) also demonstrated this association in the context of Indonesian SMEs where higher the commitment to be mindful about the environment while conducting business activities led to better application of green innovation. Therefore, we hypothesize:

H5. Psychological green climate and employee green commitment sequentially mediate the relationship between green employee empowerment and green creativity

Figure 1 Conceptual Model

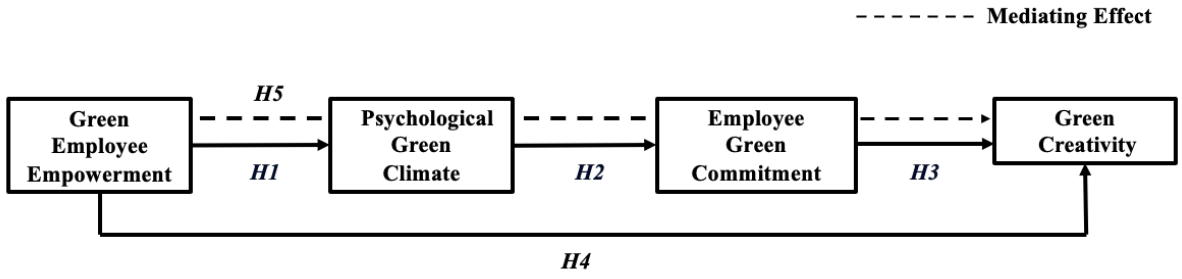


Table 2 Summary of Hypotheses

Hypothesis Number	Hypothesis Statement
H1	Green employee empowerment has a positive effect on psychological green climate
H2	Psychological green climate has a positive effect on employee green commitment

H3	Employee green commitment has a positive effect on green creativity
H4	Green employee empowerment has a positive effect on green creativity
H5	Psychological green climate and employee green commitment sequentially mediate the relationship between green employee empowerment and green creativity

2.6 Summary of the Chapter

This chapter provides a thorough discussion of the literature review of all the variables and relationships in this study. The independent variable “green employee empowerment” is discussed in depth, followed by the mediating variables “psychological green climate” and “employee green commitment”, as well as the dependent variable “green creativity”. Furthermore, this section provides an in-depth discussion of the social exchange theory which has been utilized in this study. Finally, this chapter provides a detailed discussion of the relationships between all the variables in the study, as well as how the hypotheses were developed. The study's conceptual model and hypotheses table are exhibited towards the end of the chapter.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The purpose of this chapter is to thoroughly discuss the methodology that was applied in this investigation. The research philosophy, design, and strategy are discussed at the outset, followed by a thorough contextual analysis and the sampling method this study used. Furthermore, details regarding the measures used to collect data is also included in this section. Along with the data process, the chapter also describes the techniques used for data analysis. The ethical decisions made during the research are covered in the final section of the chapter.

3.2 Research Design

3.2.1 Research Philosophy

Before conducting any sort of research, it is critical to understand the research philosophy. It assists researchers in developing an appropriate research strategy as well as evaluating different methods and avoiding ineffective research methods. The term "research philosophy" can be defined as "a system of beliefs and assumptions about the development of knowledge" (Saunders et al., 2009). According to Crossan (2003), the nature of philosophical question which show the philosophical understanding of the research tend to establish the philosophy of the research. Additionally, the researcher also anticipates the potential contribution of the study as a consequence of the interaction between the research philosophy and the research question (Alainati, 2015). As per Saunders et al. (2019) there are five core research philosophies: "positivism", "interpretivism", "critical realism", "postmodernism" and "pragmatism".

The current study adopts a positivist philosophy of research signifying that there is an objective reality that solely depends on human behaviors and is independent of human minds (Crossan, 2003). The positivist approach strongly emphasizes that research must be conducted in an environment where variables can be manipulated and controlled, and an objective interpretation must be provided for the data gathered through this research (Park et al., 2019; Saunders et al.,

2009). The current study approach has been adopted the positivist approach in order to accurately evaluate the causal relationship between green employee empowerment and green creativity with the sequential mediating roles of psychological green climate and employee green commitment. Moreover, with the support of the accepted theory of social identity, this method has also been used to help us deductively evaluate the relationships between the aforementioned variables.

Researchers tend to make assumptions at every stage of their research, whether they are conscious of it or not (Burrell & Morgan, 2017). These assumptions include: "epistemological assumptions," which are related to human knowledge; “ontological assumptions”, which are related to realities encountered during research; and “axiological assumptions”, which are the extent to which a researcher's values influence the research process (Saunders et al., 2009). To test a priori assumptions that frequently appear in quantitative studies, positivism employs the hypothetic deductive approach, which may identify functional links between the independent and dependent variables (Sekaran, 2003).

3.2.2 Quantitative Research

This current study adopts a quantitative examination design which involves statistical analysis and empirically testing the hypothesized relationships (Bradley, 2023). According to Saunders et al. (2019), combining quantitative research with organized data collection techniques can help produce descriptive findings. Cohen et al. (2007) also emphasized the importance of quantitative research in providing empirical evidence through the collection and analysis of numerical data. Quantitative research provides numerical data that can be analyzed statistically which aids researchers in measuring variables precisely along with helping them interpret relationships and patterns within the data (Creswell & Tashakkori, 2007). Additionally, quantitative research aims to quantify the research problem, with the help of statistical techniques to analyze data, test hypotheses and come up with valid conclusions based on empirical evidence instead of relying on biased interpretations only (Barlett et al., 2001; Cohen et al., 2007).

Quantitative research aims for objectivity by minimizing researcher bias and subjectivity, and seeks to generalize findings to broader populations (Creswell & Tashakkori, 2007). Additionally,

by quantifying variables and behaviors, quantitative research allows the replication of studies by other researchers, enhancing the validity as well as the consistency of the findings in the field of business studies (Barlett et al., 2001; Saunders et al., 2019). Quantitative research also employs standardized procedures, measurement instruments, and statistical methods which lead to more reliable and valid research, grounded in empirical evidence. This helps promote evidence-based decision-making in domains like psychology and organizational behavior (Saunders et al., 2019).

3.2.3 Survey Research

Survey research can be defined as "the collection of information from a sample of individuals through their responses to questions" (Check & Schutt, 2012, p. 160). Studies in the GHRM realm have extensively utilized the survey research method (Ahmed et al., 2023; Bakari et al., 2024; C. & Prabu, 2023; Dumont et al., 2017; Guerci et al., 2015; Jia & Shang, 2024; Kant, 2023; Pinzone et al., 2016; Zaki, 2024). The main purpose of survey research is to collect information regarding the opinions, attitudes, behaviors, or characteristics of individuals, in order to explain or predict a phenomenon (Ishtiaq, 2019). The current study investigates the impact of green employee empowerment on green creativity with the sequential mediation of psychological green climate and employee green commitment using a questionnaire-based survey due to the convenience it provides in collecting uniform data from the respondents (Saunders et al., 2019). Additionally, surveys are an efficient source of collecting data from a significantly larger number of respondents in a short time-frame, allow standardization of the data collection instruments, ensure anonymity and confidentially, along with being cost-effective (Saunders et al., 2019).

3.3 Contextual Analysis

Employing approximately 25 percent of the country's total population, the manufacturing sector of Pakistan was reported to contribute around 18 percent to the country's total GDP (Pro Quality Control International, 2022). The manufacturing sector of Pakistan is dominated by the textile industry, food processing industry, oil and gas industry, chemical industry and cement industry (Pakistan Bureau of Statistics, 2023).

According to the Punjab Board of Investment and Trade, the textile sector is the most important manufacturing sector of Pakistan contributing approximately 8.5 percent of the total GDP and employing a workforce of around 19 million. Moreover, Pakistan ranks eighth worldwide in terms of export of textile products, with the third largest spinning capacity in the world (Pakistan Gulf Economist, 2023). However, these endeavors have led to increased waste generation leading to harmful environmental impacts by the textile sector. These environmental impacts include huge amounts of chemical loads due to the high consumption of water and harmful chemical used during the dyeing, bleaching and printing processes making the textile sector a major contributor of air and water pollution as well (Pakistan Gulf Economist, 2023). However, as per All Pakistan Textile Mills Association (APTMA), due to the increasing awareness of environmental protection globally, several stringent requirements have been imposed on Pakistan's textile exporters by their international consumers. These requirements include zero discharge of hazardous chemicals and focus on water conservation in the light of impending acute water shortage. Green creativity in the textile industry can play a significant role in the development of new environmentally-friendly fabrics and products, as well as foster production methods which help reduce wastage, allowing these organizations to meet stakeholder demands while staying competitive in the market.

The oil and gas sector is also one of the most valuable sectors in the Pakistan economy and has seen phenomenal growth since the independence in 1947 (The Institute of Chartered Accountants of Pakistan, 2020). The energy sector of Pakistan heavily depends oil and gas which contribute to approximately 38 percent of the overall primary energy supply mix of the country (International Train Administration). The oil and gas industry of Pakistan however has a significantly huge impact on the environment compared to any other industry (Khan & Hassan, 2023). Along with incidents of oil spills, the industry discharges poisonous waste and chemicals which causes different types of pollutions like that of air, water and soil, and also endangers biodiversity (Ullah et al., 2008). Moreover, the oil and gas sector is the highest consumer of energy and is accountable for more than 49 percent of Pakistan's total carbon emissions (Hydrocarbon Development Institution of Pakistan, 2019). According to the Environmental Protection Agency (EPA), the oil and gas sector is a significant source of methane emissions that are extremely harmful for the environment. Throughout the world, several different regulations are being applied to the onshore oil and natural gas industry in order to help combat climate change and reduce carbon emissions

(EPA). Pakistan has also established regulatory authorities like the Pakistan Upstream Petroleum Regulatory Authority in order to monitor environmental compliance (Pakistan Today, 2022). Green creativity in this sector can help the organizations adopt renewable energy sources such as solar and wind power, along with foster new technologies that can mitigate environmental risks like oil spills.

The fertilizer sector in Pakistan also significantly contributes towards the Pakistan economy, employing almost 100,000 people directly and approximately 200,000 indirectly in the transportation, marketing and retail sectors (Pakistan Economic Survey, 2023). While the fertilizer sector has helped to almost double the rate of food production, it is also a major contributor of environmental pollution (Environment & Suitability in Defense & Nuclear Energy Sector, 2023). According to The Narratives, innovation is setting new benchmarks in the fertilizer sector and the use of new environmentally friendlier variants is on the rise. Moreover, according to Express Tribune since sustainable agricultural practices are gaining acceptance in Pakistan, agricultural conglomerates have started investing in to formulate innovative and advanced variations of fertilizers that are environmentally sustainable. Employee green creativity can aid these organizations of this industry in these pursuits.

The employees of an organization play a primary role in helping achieve the strategic goals, including environmental and sustainability goals, and the HR department plays an integral part in empowering and motivating the employees, along with shaping the organizational climate. Hence, an examination into the factors that can help the manufacturing sector of Pakistan reduce pollution and their overall carbon footprint by increasing green creativity in their employees is necessary.

3.4 Population and Sampling

3.4.1 Target Population

Saunders et al. (2019) defined target population as the total population of people that researchers want to investigate and to which they intend to generalize the findings of their study. Furthermore, Saunders et al. (2019) emphasize how important it is to clearing define the target

population of the study and how characteristics of the target population tend to influence various aspects of the study, including sampling techniques, methods of data collection, as well as the generalizability of results.

3.4.1.1 Manufacturing Sector of Pakistan

The target industry for the present study is the manufacturing sector of Pakistan, with a particular emphasis on three industries: fertilizer, textiles, and oil and gas. The manufacturing sector, as defined by the United Nations Industrial Development Organisation (UNIDO), is the area of the economy that is devoted to producing goods by converting raw materials into finished goods such as textiles, electronics, automobiles, machinery, and various consumer goods. The primary reason why this study has selected the manufacturing sector is due to the high stakeholder pressure to adopt green initiatives owing to the sector being a major contributor of waste generation (Wang, 2016). This makes the manufacturing sector suitable according to the objectives of the study, which are to investigate the causal relationships between green employee empowerment, psychological green climate, employee green commitment, and green creativity.

The present study specifically targets organizations that back sustainability and green organizational initiatives. The four organizations from the textile sector have undertaken the pursuit of executing green organizational practices and are committed towards the global net zero (APTMA). Likewise, all three organizations from the fertilizer sector have also put green organizational principles into practice through innovative initiatives aimed at combating climate change through developing green fuel alternatives, thus playing a major role in achieving net-zero emissions (Custom News, 2021). Moreover, these organizations are continuously investing in green technologies and are also prioritizing the UN Sustainable Development Goals (SDGs) of climate action in order to reduce their environmental footprint (Engro Sustainability Report, 2021; Fauji Fertilizer Financial Report, 2022). Lastly, all four organizations from the oil and gas sector are proactive in taking energy consumption initiatives and claim that environmental sustainability is their priority (OGDCL Annual Report, 2023; PSO Annual Report 2023; MPCL Annual Report, 2023; PPL Annual Report, 2023). Appendix 2 includes the list of organisations from which data was collected for this study.

3.4.1.2 White-collar employees

The present study specifically targets white-collar employees of the manufacturing sector of Pakistan, in the industries of textile, fertilizer and oil and gas. According to the Bureau of Labor Statistics (2002), workers who carry out management, administrative, or professional duties in an office setting are commonly referred to as "white-collar" employees. These employees are usually associated with non-manual labor and tend to play a crucial role in strategy formulation as well as strategy implementation within organizations (Boal & Schultz, 2007).

White-collar employees tend to hold managerial or supervisory positions in roles like management, finance, sales and marketing and contribute their expertise to the strategic planning process (Dunford et al., 2001). Their roles often involve decision-making that also influence the organization's environmental policies, thus understanding their perspectives on green employee empowerment can be insightful (Renwick et al., 2013). Moreover, white collar employees play a major role in translating the strategic objectives to actional plans, often by leading the team (Hitt et al., 2013). These employees also play an integral role in shaping the culture of an organization, and hence can prove to be integral in fostering a culture that promotes sustainability (Espinoza & Ukleja, 2016). Lastly, since white-collar employees typically work in knowledge-based environments where creativity is critical, and because they are usually well-educated with specialised skills, empowering them with green initiatives can be beneficial in generating green innovation in the organization (Chen & Chang, 2012).

3.4.2 Unit of Analysis

The prime focus of data collection is the "unit of analysis". According to Silverman & Solmon (1998, p.272), unit of analysis can be defined as "the level at which data are used to represent one data point in an analysis". The choice of the unit of analysis is established by several elements which include, the researcher's emphasis, phenomena of the study, target audience and the participants of the study (Hopkins, 1982). The unit of analysis in a study also depicts the extent to which the data gathered is explicitly focused on one or more elements (Hopkins, 1982). These elements fall within three categories; micro, meso and macro, and can include organizations, departments, activities, events, individuals and employees (Kumar, 2018). An individual is

considered at the micro level, an organization at meso level, while a society, country or a whole region is considered at macro level of analysis (Serpa & Ferreira, 2019).

While there are unlimited possible units of analysis in the business and management realm of research, the individual unit of analysis tends to be the most prevalent one due to its ability to make generalization simpler as compared to other units of analysis like the organizational unit of analysis (Kumar, 2018). Additionally, research indicates that employees are a reliable source of information on HRM practices when the goal of the study is to understand the actual practices adopted by the organization (Gerhart et al., 2000). Hence, the current study has adopted the individual level of analysis as the primary aim of the study is to investigate the impact of green employee empowerment on green creativity, with the sequential mediation of psychological green climate and employee green commitment in the manufacturing sector of Pakistan.

3.4.3 Non-probability Sampling

Non-probability sampling is a technique of sampling where the likelihood that a particular member of the population will be selected is unknown, and individuals are selected based on non-random criteria, such as convenience, judgment, or any specific characteristics (Babbie, 2020). Non-probability sampling is often adopted in the realm of business and management research due to several factors. Firstly, non-probability sampling methods such as purposive sampling are often less costly and time-consuming compared to probability sampling methods. Secondly, this sampling method is more accessible and allows researchers to select samples based on convenience or specific criteria, which makes is easier to gather data from populations that are not easily reachable through other sampling methods (Malhotra et al., 2020). Non-probability sampling also offers flexibility, allowing researchers to adjust their sampling technique according to the unique characteristics of their study and where the objective is to target a specific niche or group, as this study did in relation to white-collar managerial employees of three specific industries within the manufacturing sector of Pakistan (Sekaran & Bougie, 2016, Hair et al., 2014). Hence, the present study has adopted the non-probability sampling technique while taking into consideration all the benefits like cost-efficiency, accessibility and flexibility.

3.4.3.1 Purposive Sampling

Purposive sampling is a type of non-probability sampling technique where researchers deliberately pick out individuals based on specific criterias according to the unique objectives of their study (Huyler & McGill, 2019). Since purposive sampling allows the researchers to select their participants based on specific attributes and characteristics in accordance with the research objectives, the validity as well as relevance of the findings of the study tends to be improved (Tongco, 2006). Furthermore, purposive sampling is more cost-effective and time-efficient as the respondents are relevant to the research objectives compared to random sampling where the respondents are selected randomly (Tongco, 2006). The current study has utilized purposive sampling to select the participants from the manufacturing sector of Pakistan. The inclusion criteria included that the employees must belong to one of the three sectors which included the fertilizer sector, the textile sector and the oil and gas sector of Pakistan. Another criteria was that the respondents must be full-time and permanent employees of the organization, holding at least a bachelor's degree and a minimum work experience of one year in their current organization.

3.4.3.2 Snowball Sampling

Snowball sampling is another type of non-probability sampling where the existing participants of the study recruit the future participants from their acquaintances, contacts or social networks which helps expand the sample size of the study (Browne, 2005). Snowball sampling is especially useful for getting access to participants that are difficult to reach through traditional sampling methods, such as individuals with specific attributes or ones that are difficult to contact directly (Biernacki & Waldorf, 1981). Snowball sampling is also more cost-effective than other sampling methods, especially when research funding is limited or where it is difficult to access the participants (Heckathorn, 1997). As initial informants refer others from their own networks who meet the criteria of the study, snowball sampling helps expedite the process of data collection (Biernacki & Waldorf, 1981).

The present study employed the snowballing technique as it was difficult to get access to senior managers and executives through other sampling techniques. These professionals have busy schedules and reaching out to them directly for participation in the study tends to be a challenging

process. Moreover, they are more likely to respond when they receive the research questionnaire from a familiar and trusted contact. This technique has helped us access these participants by leveraging referrals from the initial contacts who belonged to managerial positions in the fertilizer, textile, and oil and gas sectors of Pakistan. Snowball sampling helped streamline the data collection process for the current study and saved time and effort for both the researcher and the participants.

3.4.4 Sample Size

Sample size can be defined as "the number of respondents or observations to be included in a study" (Memon et al., 2020, p. 2). The sample size of a study impacts its validity and the reliability; hence it is necessary for the study to have a suitable and adequate sample size (Barlett et al., 2001). Hair (2017) and Memon et al. (2020) have discussed an extensive range of rules and guidelines to determine the sample size. These include "sample-to-item ratio", "sample-to-variable ratio", "A-priori sample size for structural equation models" and "the Krejcie and Morgan's table". Kline (2005) also established certain guidelines for sample sizes and asserted that a sample size of greater or equal to 200 is considered large. Since this study employs Smart PLS 4.0 to conduct the statistical analysis, the sample size has been determined according to the reference of Kline (2005). Hence the sample size of the present study is 226.

3.5 Data Collection Method

3.5.1 Survey Design

A 16-item questionnaire was used to measure green employee empowerment, psychological green climate, employee green commitment and green creativity constructs. All scales were adapted from existing measures. All the questions were in the language of English. The participants of the study responded using a 5-point Likert scale with anchors including 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree. The content validity of the questionnaire was also verified in order to gauge whether it measures the constructs effectively (Cooper & Schindler, 2014). Furthermore, the questionnaire, definitions of study

variables, along with the research aims were evaluated by two professors with expertise in human resource management, and no major issues were identified.

3.5.2 Measures

Green employee empowerment

"Green employee empowerment" was measured using a three-item perceived investment in employee development (PIED) scale which was established by Digalwar et al. (2013) who state a reliability of 0.902. A sample item from this three-item scale included: "In my organization, green teams are being set up to tackle environmental problems."

Psychological green climate

"Psychological green climate" was measured using a widely-accepted five-item scale which was established by Norton et al. (2014) who gave a reliability value of 0.93. A sample item from this five-item scale included: "My organization would like to be perceived as green entity."

Employee green commitment

"Employee green commitment" was measured using a four-item scale which was created by Wang (2016), who stated a reliability value of 0.953. A sample item from this scale included: "If I don't implement green behaviors at work, I feel regret."

Green creativity

Green creativity was measured using a four-item scale which was created by Alyahya et al. (2023), who gave a reliability value of 0.97. A sample item from this four-item scale included: "I propose new green ideas to improve environmental performance."

3.5.3 Pretesting

It is essential to pre-test the survey questionnaire in order to make sure that there are no uncertainties and the respondents can easily interpret the questions as intended by the researcher (Memon et al., 2020). A small sample of the total respondents is used to evaluate whether the

questions are relevant and comprehendible (Howard, 2018). For the current study, pre-testing was conducted on seven employees from the manufacturing sector of Pakistan before the actual process of data collection was commenced. This was done to identify any problems the respondents faced while completing the questionnaire. However, none of the respondents expressed any concerns, nor gave any recommendations. Hence, no changes were made to the questionnaire.

3.5.4 Time Horizon

Time horizon is the total time taken to complete the research. The present study utilized a cross-sectional research design where data was gathered at a particular point in time only (Wang & Cheng, 2020). This is an efficient and fast research option for an observational study design compared to longitudinal studies which are repeated over a long time. This method allowed us to measure all our variables and is ideal for descriptive analysis. Moreover, given the scope of this research is confined to a limited time-span, the cross-sectional research is optimal.

3.5.5 Data Collection and Questionnaire Administration

Due to the geographically dispersed target population, an online survey was generated. This was done in order to approach managerial employees working in major cities all over Pakistan. To gather data from the oil and gas, and fertilizer sector, employees from the cities of Karachi, Lahore and Islamabad were contacted. The reason for this was that the head offices of the major organizations in these two industries are located in these three cities. White-collar managerial employees are usually based in the head offices of organizations as that is where strategy formulation is done. However, as far as the textile sector was concerned, employees from Karachi, Lahore and Islamabad as well as Faisalabad and Sialkot were contacted. The inclusion of Faisalabad and Sialkot was due to fact that they are two major textile producing and exporting cities of Pakistan, and are home to several textile mills (Business Recorder, 2022). Data was collected during the months of August, September and October 2023. None of the samples out of 226 were excluded during the process of screening as all the respondents met the pre-defined criteria to be included in the study. This meant that all the respondents were full-time and permanent employees in the manufacturing sector of Pakistan, and belonged to either of the three

sectors: fertilizer, textile and oil and gas. Moreover, all these respondents held a bachelor's degree or higher, and had been a part of their current organization for at least one year.

3.6 Common Method Bias

In survey-based research, common method bias (CMB) is typically a major concern. According to Hair (2014) and Podsakoff et al. (2003), CMB is the degree of covariance among the items measured as a result of the data coming from a single source. There are a number of remedies used to address the CMB problem. This study has utilized both procedural and statistical methods to address this problem. For example, the respondents' confidentiality and anonymity has been ensured throughout the data collection process. To ensure validity and reliability, the questionnaire has also been pre-tested before the data collection process started. Additionally, the language of the questionnaire was refined, and the respondents were assured that there is no single correct answer to the questions. Lastly, at statistical level, the Harman's Single Factor technique has been employed after the process of data collection was completed, in order to identify any common method bias (Harman, 1967). All sixteen items were incorporated in the exploratory factor analysis. The results indicate that the chance for maximum variance could be 47.78 per cent, signifying that there is no common method bias issue in the present study since not even a single factor accounted for over 50 per cent, which is the cut-off value suggested by Podsakoff & Organ (1986).

3.7 Ethical Considerations

Throughout the study, ethical concerns were carefully addressed in order to ensure the well-being, continentally as well as the rights of the participants. Firstly, the questionnaire was enclosed with a cover letter to assure that the responses will be used only for the purpose of this research, and in order to ensure confidentiality (Sekiguchi et al., 2017). Moreover, the respondents' identities as well as the responses' anonymity were guaranteed, and in order to avoid any mishaps, the collected data was kept secure. During the process of data collection, it was ensured that the participants' names or identity were not asked. Additionally, in order to respect the privacy of

participants, the researchers were clearly informed how the data gathered through their responses was going to be used.

Consent was attained from the participants before involving them in the research. This was done by informing them about the purpose of the research, as well as the risks and benefits of their participation in the study. Additionally, it was ensured that the respondents were not pressured to participate in the study and were given full liberty to choose to not respond to the questionnaire. Throughout the study, it was ensured that no incentives of any kind were offered to the participants in order to compel them to participate in the research, and the participation of each respondent was totally voluntary. The present study also ensured that absolutely no sort of pressure was exerted on the participants to provide a specific response.

Research integrity was also ensured. This included full transparency while reporting the results of the study, and ensuring that all the findings were reported honestly and there were no fraudulent and deceptive results reported. Moreover, any potential biases and limitations that may have influenced the results of the study have also been reported. The cover-letter attached with the survey accurately disclosed the credentials of the researcher, university affiliations, research supervisor's information and motivation behind conducting this research. Moreover, transparency was also ensured by clearly documenting the methodology, data collection process as well as the statistical analysis techniques employed by the research to produce reliable and valid results.

Cultural sensitivities were also carefully considered throughout the study. It was made sure that none of the questions in the survey were disrespectful towards a certain gender, race, religion or cultural group. While asking about the gender of the respondents, an option of "other" was provided in the questionnaire besides "male" and "female" in order to ensure inclusion. Moreover, it was ensured that no culturally insensitive questions were included in the study. This was confirmed during the pilot study as no issues were highlighted by the respondents.

3.8 Data Analysis

To put the hypotheses to test and conduct the analysis for this study, “partial least squares structural equation modelling” (PLS-SEM) was utilized. The PLS approach to structural equation modeling (SEM) is frequently used and preferred in business research fields such as information systems, consumer behavior, and marketing (Peng & Lai, 2012). PLS-SEM helped us predict the dependent variable (Mora et al., 2012) as well as accommodate the incremental nature of the study i.e., the role of psychological green climate and employee green commitment as a sequential mediation between green employee empowerment and green creativity (Hair, 2014; Lu et al., 2016). The measurement model must pass the first stage's internal consistency reliability, convergent and discriminant validity (DV), and the structural model must pass the second stage's hypothesis testing (Sarstedt et al., 2023).

SmartPLS version 4.0, which is a scientifically grounded software (Memon et al., 2021) was used to conduct the data analysis of this study. This software has proven to be very beneficial in assisting researchers for the process of analysis of complex relationships between latent variables i.e., moderation and mediation (Hwa et al., 2023). Additionally, the SmartPLS 4.0 provides all relevant results for the evaluation of the measurement model (Sarstedt et al., 2023), making this software ideal for the data analysis of this study.

3.9 Summary of the Chapter

This chapter thoroughly discussed all the components involved in research methodology. It presents the research philosophy, research strategy and design, along with a detailed contextual analysis. Additionally, the sampling technique employed, along with details of all the measures were also disclosed in this chapter. Lastly, the chapter also included the analytical approach, data screening and ethical consideration undertaken by this study.

CHAPTER 4: RESULTS AND ANALYSIS

4.1 Introduction

This chapter presents the survey data gathered from the respondents, along with the analysis. It begins with the respondents' demographic statistics, which include demographic factors such as gender, age, and educational level. Furthermore, this section includes information about the respondents' city of residence, the industry in which they are currently employed, and the number of years of work experience they currently have. This chapter presents the demographic statistics of the respondents in both a paragraph and a table format. Secondly, the chapter includes the measurement model which includes information regarding the internal consistency reliability, convergent validity, and degree of validity of the study's constructs. Again, this is presented both in the form of a paragraph and a table. Additionally, the chapter presents the study's multicollinearity, structural model as well as the common method bias. The chapter also includes figures displaying the results of the structural model and the evaluation of the measurement model through the PLS algorithm.

4.2 Missing Values Analysis

The data was screened for missing values, thoughtless responses, and outliers before being analyzed on SmartPLS. For this, SPSS and Microsoft Excel were used. The screening process, however, revealed that none of the responses were suspicious, and hence all 226 responses were used for data analysis.

4.3 Demographic Statistics

The demographic breakdown of the respondents is shown in Table 3. It shows that 51.8 percent of the respondents were male, while 48.2 percent were female. As far as the age of the respondents is concerned, 2.2 percent of the respondents were between the ages of 18 and 24, 41.2 percent were between the ages of 25 and 35, 50.4 percent were between the ages of 36 and 50 while 6.2 percent of the respondents were between the ages of 50 and 64. Moreover, 38.1 percent

held a bachelor's degree, while 61.9 percent held a master's degree. Out of the 226 respondents, 11.1 percent belonged to the city of Karachi which is the main business and industrial hub of Pakistan, while 37.2 percent belonged to the city of Lahore and 38.1 percent belonged to the city of Islamabad which are also major economic hubs of Pakistan (Asian Development Bank, 2022). Moreover, 10.2 percent belonged to the city of Faisalabad and 3.5 percent belonged to the city of Sialkot which are both key textile producers, and house several renowned textile mills representing more than 65 percent of Pakistan's textile exports (Business Recorder, 2022).

The respondents of this study belonged to three industries of the manufacturing sector of Pakistan. 36.3 percent of the respondents were employed in the oil and gas industry, 32.7 percent of the employees belonged to the fertilizer industry and 31 percent of the employees were currently working in the textile sector. While all these employees were middle and senior managerial level white-collar employees, for the purpose of this research they have been further categorized into different job levels and job families. 1.3 percent of the respondents were executives or C-level employees, 11.9 percent were managers or directors, 46.5 percent of the respondents were professional or technical employees, 22.6 percent of the respondents belonged to the administrative or support departments, 7.1 percent of the respondents were skilled or tradespersons, while 10.6 percent of the respondents belonged to the sales and marketing departments. As far as the tenure of these employees is concerned, 2.7 percent of the respondents had work experience of less than a year, 7.5 percent of the respondents had one to two years of work experience, 38.9 percent of the respondents had three to five years of work experience, 38.5 percent had six to ten years of work experience, 6.2 percent had eleven to fifteen years of experience, while 6.2 percent had more than fifteen years of work experience.

Table 3 Demographic profile of the respondents

Demographic Variable	Category	Frequency	Percentage
Gender	Male	117	51.8
	Female	109	48.2

Age	18-24	5	2.2
	25-35	93	41.2
	36-50	114	50.4
	50-64	14	6.2
Qualification	Bachelor's	77	38.1
	Master's	113	61.9
Tenure	<1 Year	6	2.7
	1-2 Years	17	7.5
	3-5 Years	88	38.9
	6-10 Years	87	38.5
	11-15 Years	14	6.2
	> 15 Years	14	6.2
Job Position	Executive or C-Level	3	1.3
	Manager or Director	27	11.9
	Professional or Technical	105	46.5
	Administrative or Support	51	22.6
	Skilled or Tradesperson	16	7.1
	Sales and Marketing	24	10.6
Industry	Oil and Gas	82	36.3
	Fertilizer	74	32.7
	Textile	70	31

Note: n = 226

4.4 Multicollinearity

Before examining the structural model, the variance inflation factor (VIF), along with the validity and reliability, need to be determined. Multicollinearity is thought to be indicated by a VIF value larger than 10.0 (Burns & Burns, 2008). However, (Hair, 2014) suggested using 5.0 as

the cutoff value. Each construct's VIF result fell below the 5.0 cutoff, indicating that there were no collinearity problems in the research.

4.5 Structural Equation Modeling

4.5.1 Measurement Model Assessment

A measurement model can be defined as a theoretical framework which indicates the relationship between observed variables and latent constructs (Bollen, 1989). The measurement model was evaluated for “internal consistency reliability”, “convergent validity (CV)”, and “degree of validity (DV)” of the study's constructs.

4.5.1.1 Internal Consistency Reliability

Internal consistency reliability gauges the extent to which the latent constructs are measured by the items (Hair, 2014; Memon et al., 2017; Ramayah et al., 2016). Internal consistency was calculated with the help of the composite reliability (Hair et al., 2019; Sarstedt et al., 2017). Nunnally (1978), Bernstein et al. (1998), and Richter et al. (2016) define suitable composite reliability in a measurement model as being greater than 0.7 for each construct. Initially, various scales totaling sixteen items were used for each variable in this investigation. The findings revealed that the composite reliability (i.e. rho_c) for all constructs – green employee empowerment (0.915), psychological green climate (0.887), employee green commitment (0.879), and green creativity (0.889) - exceeded the cut-off value of 0.7, demonstrating the measurements' strong internal consistency. Table 4 displays the findings of internal consistency reliability.

4.5.1.2 Convergent Validity

Convergent validity (CV) is the degree of agreement between at least two measures of a related construct. CV evaluates "the extent to which a measure correlates positively with alternative measures of the same construct" (Hair et al., 2019, p. 112), and is another measurement to be aware of. CV evaluation entails examining the item's outer loadings and calculating the

average variance extraction (AVE). Outer loadings should be at least 0.708 or higher in value. An acceptable AVE score is 0.5 (Avkiran, 2018; Memon et al., 2017). Items with indicator loadings of 0.6 may also be considered acceptable (Chin et al., 1997). Variables with low factor loadings can be retained if other variables with high loadings account for at least 50 percent of the variance (AVE = 0.50), as recommended by Hair et al. (2019). CV was assessed by examining the variation that was mined for each factor (Fornell & Larcker, 1981). According to Memon et al. (2017) if the extracted variance (AVE) value is more than 0.5, convergent validity is shown. Table 4 demonstrates the variance extracted values for all the variables is > 0.5. Moreover, all of the items were kept because they met the criterion of 0.708 or higher. Therefore, it is supported that all of the variables have convergent validity. Table 4 presents the results of convergent validity (CV).

Table 4 Internal consistency reliability and convergent validity

Constructs	Measurement item	Loadings	AVE	CR
Green Employee Empowerment	GEE1	0.830	0.771	0.915
	GEE2	0.896		
	GEE3	0.905		
Psychological Green Climate	PGC1	0.802	0.610	0.887
	PGC2	0.749		
	PGC3	0.760		
	PGC4	0.792		
	PGC5	0.802		
Employee Green Commitment	EGC1	0.854	0.646	0.879
	EGC2	0.793		
	EGC3	0.736		
	EGC4	0.828		
Green Creativity	GCr1	0.829	0.668	0.889
	GCr2	0.807		
	GCr3	0.791		

	GCr4	0.842

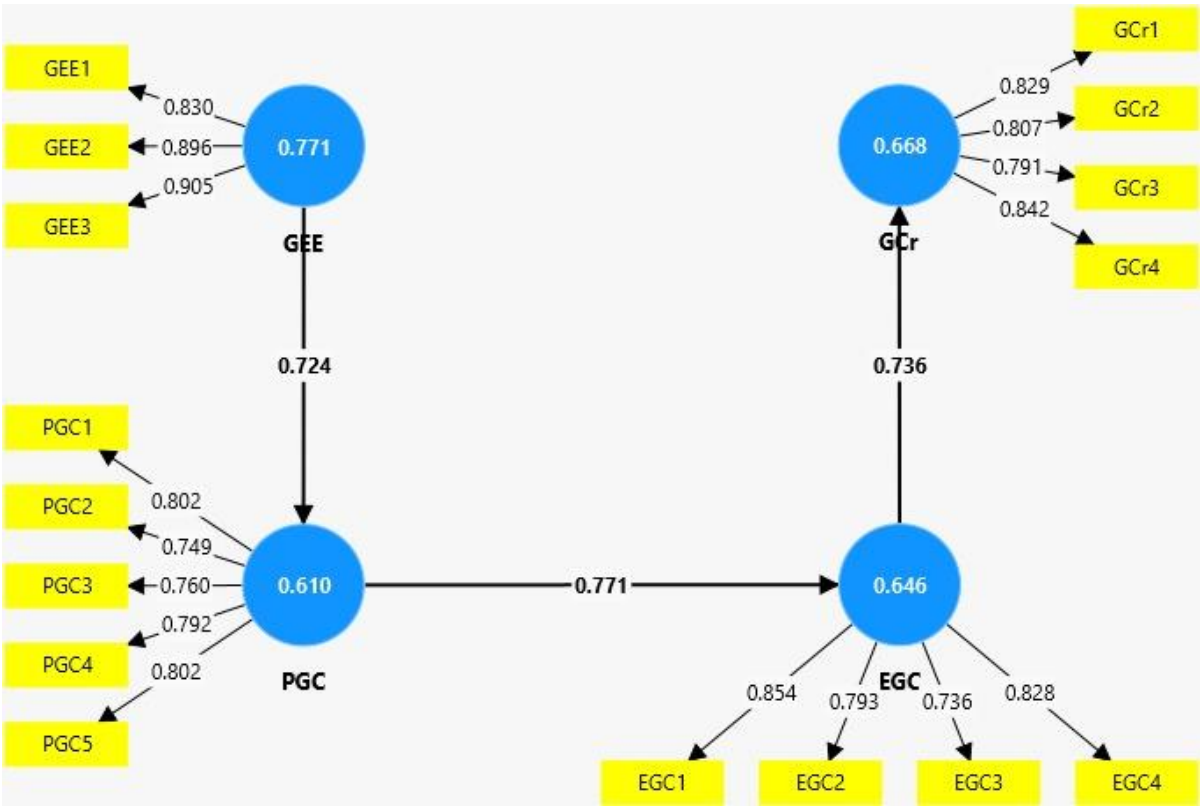
4.5.1.3 Discriminant Validity

A single construct is considered to have discriminating validity if it is different compared to the other constructs of the model (Carmines & Zeller, 1979). Here, Fornell and Larcker's criterion wasused to confirm the DV. According to Fornell and Lacker's criterion, "the square root of AVE of a construct should be larger than the correlation between the construct and other constructs in the model". The current investigation did not stray from the DV's assumptions, as evidenced by the Fornell and Larcker's criterion. Our results indicate that the square root of AVE of each latent variable was higher than its correlation with other latent variables as shown in Table 5 below.

Table 5 Discriminant Validity (Fornell and Larcker criterion)

	EGC	Green Creativity	GEE	PGC
EGC	*0.804*			
Green Creativity	0.736	*0.817*		
GEE	0.642	0.599	*0.878*	
PGC	0.771	0.613	0.724	*0.781*

Figure 2 Measurement model (AVE and factor loadings)



4.6 Structural Model

According to Hair et al. (2019), researchers must state the coefficient of determination (R^2) along with explaining the significance of the relationships. Therefore, R^2 values were examined and are displayed in Table 6. The value of R^2 indicates that green employee empowerment explains 52.1 percent of the psychological green climate (R^2 = 0.521), 59.2 percent of the employee green commitment (R^2 = 0.592) and 54.0 percent of the green creativity (R^2 = 0.540).

Table 6 Coefficients of determination (R^2 adjusted)

Latent constructs	Coefficient of determination R^2 adjusted
Green Employee Empowerment	-
Psychological Green Climate	0.521

Employee Green Commitment	0.592
Green Creativity	0.540

4.7 Structural Model Evaluation

The evaluation of the PLS-SEM structural model focuses on determining the significance and relevance of path coefficients, followed by analyzing the model's explanatory and predictive capacity (Hair et al., 2021). To test the statistical significance of the proposed model, the bootstrapping procedure with resampling (5,000 resamples) was used (Hair et al., 2019).

4.7.1 Hypotheses Testing (Direct effects)

The results imply that green employee empowerment (H1: β 0.724, STDev: 0.036, P value < 0.001) has a significant direct correlation with psychological green climate, as was hypothesized in our study. Results also indicate that psychological green climate (H2: β 0.771, STDev: 0.072, P value < 0.001) has a significant positive association with employee green commitment, as was hypothesized. Additionally, results supported that employee green commitment (H3: β 0.736, STDev: 0.045, P value < 0.001) has a positive significant association with green creativity. The results of this study demonstrated a positive association between green employee empowerment and green creativity as well (H4: β 0.601, STDev: 0.050, P value < 0.001). Table 7 reports the findings of the structural model evaluation indicating that all the proposed direct hypotheses were accepted.

4.7.2 Hypotheses Testing (Indirect effect)

Sequential mediation was performed in order to examine *H5* which indicated the sequential mediating roles of psychological green climate and employee green commitment between green employee empowerment and green creativity was also supported (H5: β 0.411, STDev: 0.049, P value < 0.001). Tables 8 reports the findings of the structural model evaluation indicating that the proposed indirect hypothesis was accepted.

Figure 3 Structural model (Path coefficient and adjusted R^2)

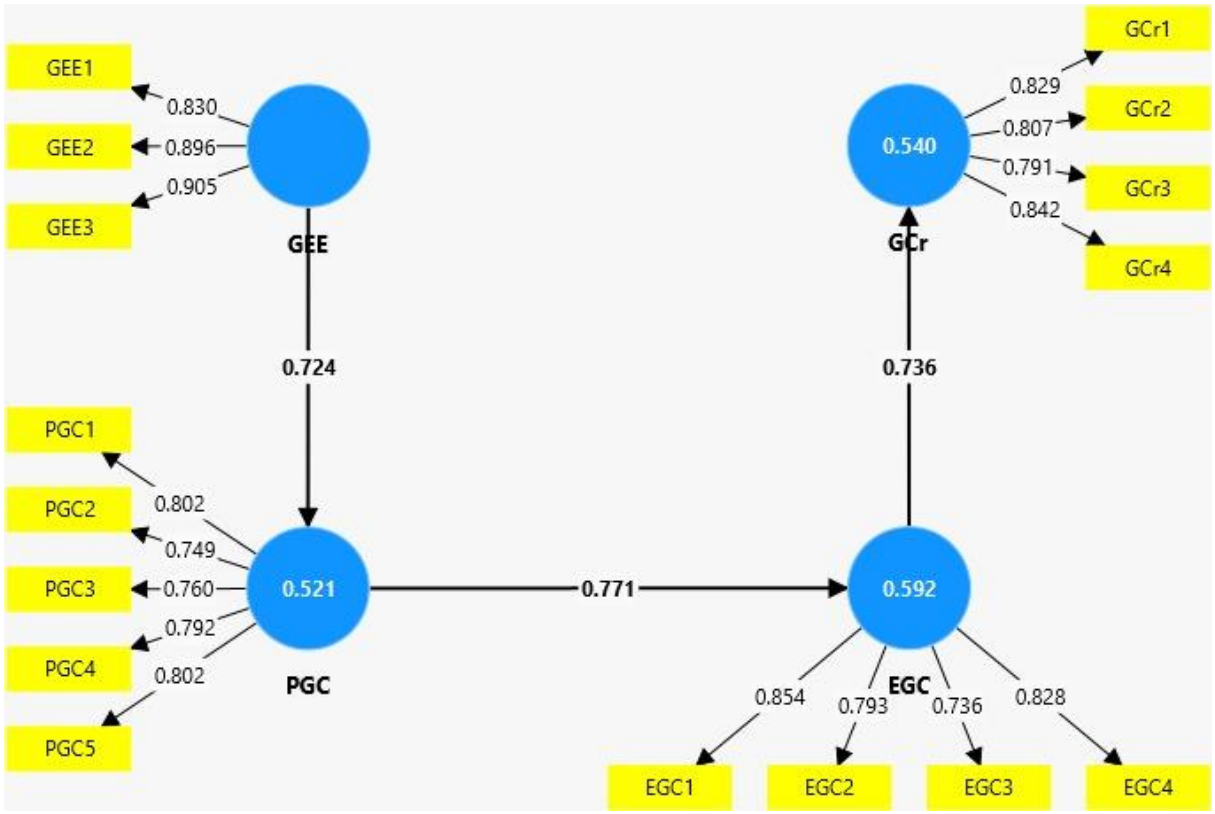


Table 7 Hypotheses Testing (Direct Effects)

Hypotheses	Path	Beta	STDEV	*t*-value	P values	Decision
H1	GEE -> PGC	0.724	0.036	19.940	0.000	Supported
H2	PGC -> EGC	0.771	0.042	18.545	0.000	Supported
H3	EGC -> Green	0.736	0.045	16.525	0.000	Supported

	Creativity					
H4	GEE -> Green Creativity	0.601	0.050	12.011	0.000	Supported

Table 8 Hypotheses Testing (Indirect Effects)

Hypotheses	Path	Beta	STDEV	*t*-value	P values	Decision
H5	GEE -> PGC -> EGC -> Green Creativity	0.411	0.049	8.405	0.000	Supported

4.8 Summary of the Chapter

This chapter presented the study's findings, which included survey data from respondents as well as analysis. It began with the respondents' demographic statistics, which include gender, age, and educational level, as well as information about the respondents' city of residence, industry in which they are currently employed, and number of years of work experience. The demographic statistics of the respondents were also presented in the chapter in both paragraph and table format. Secondly, the chapter displayed the measurement model, which included information about the study's constructs' internal consistency reliability, convergent validity, and degree of validity. This again was demonstrated in the form of a paragraph and a table. Finally, the chapter discussed the study's multicollinearity, structural model, and common method bias. The chapter also included figures and tables displaying the structural model's results and the measurement model's evaluation using the PLS algorithm.

CHAPTER 5: DISCUSSION

5.1 Introduction

The chapter includes interpretation of the data and a detailed explanation of the findings. Additionally, the chapter offers valuable recommendations for HR practitioners and managers, as well as researchers interested in theoretical study. The chapter wraps up with limitations of the study, along with recommendations for the future, and a conclusion.

5.2 Recapping / Research Highlights

The objective of this investigation is to determine the impact of green employee empowerment on green creativity in the manufacturing sector of Pakistan. Furthermore, this study also analyzes the roles of psychological green climate and employee green commitment as sequential mediators between this relationship. This study utilizes the social identity theory in order to provide a strong foundation to the framework of this study.

The current investigation is quantitative in nature and utilized a 16-item survey questionnaire to collect data from full-time employees of the manufacturing sectors of oil and gas, textile and fertilizer. For the purpose of data analysis, the current study used SmartPLS 4.0. The findings of this study revealed that green employee empowerment has a positive impact on psychological green climate as well as green creativity. Additionally, psychological green climate also has a positive effect on employee green commitment. Lastly, the sequential mediation of psychological green climate and employee green commitment between green employee empowerment and green creativity was also confirmed through this study.

Table 9 Summary of Hypotheses Results

Hypothesis Number	Hypothesis Statement	Decision

H1	Green employee empowerment has a positive effect on psychological green climate	Supported
H2	Psychological green climate has a positive effect on employee green commitment	Supported
H3	Employee green commitment has a positive effect on green creativity	Supported
H4	Green employee empowerment has a positive effect on green creativity	Supported
H5	Psychological green climate and employee green commitment sequentially mediate the relationship between green employee empowerment and green creativity	Supported

5.3 Discussion of findings

The primary aim of this study was to investigate the causal relationships between green employee empowerment, psychological green climate, employee green commitment and green creativity, and to determine whether there is a sequential mediation of psychological green climate and employee green commitment between green employee empowerment and green creativity in the context of the manufacturing idustry of Pakistan. Although there is ample literature available on organizational green initiatives like green training and green performance management with psychological green climate, there is inadequate empirical literature present on how green employee empowerment impacts psychological green climate as green employee empowerment still remains an under-investigated area in GHRM literature. Hence, this present study fills this gap. Moreover, the present study extends psychological green climate and employee green commitment as significant sequential mediators between green employee empowerment and green creativity.

5.3.1 Hypothesis 1. Green employee empowerment has a positive effect on psychological green climate

As proposed, the results of this research indicate that green employee empowerment has a significant positive impact on psychological green climate among the manufacturing sector employees in Pakistan (*H1*). These findings support previous evidence which established that

GHRM initiatives like green employee empowerment play a key role in positively influencing the psychological green climate psychological green climate of an organization (K., 2023). Green employee empowerment includes organizational initiatives like sharing of knowledge, support from supervisors, employee acknowledgment, green conscious mindset and employee participating in pursuing green tasks which improves the shared sense of environmental well-being in an organization. In other words, when employees are inspired and encouraged to participate in these environmental initiatives by the management, their overall perception of the organization's environmental programs and policies is elevated. Furthermore, our findings are also in accordance with previous literature which indicates that other GHRM initiatives like "green recruitment and selection", "green training", "green performance management" and "green pay and rewards" have a positive and significant effect on psychological green climate (Keles et al., 2023; Sabokro et al., 2021).

5.3.2 Hypothesis 2. Psychological green climate has a positive effect on employee green commitment

As anticipated, the findings of this research show that psychological green climate is a significant predictor of employee green commitment. This indicates that the higher the perception of employees about the organization being pro-environmental, the more environmental commitment they will exhibit. These findings are consistent with the findings by Afridi et al. (2023) that stronger psychological green climate leads to an increase in the employees' intrinsic motivation towards the conversation of the environment. Based on previous evidence (Munyaka et al., 2017; Reddy & Reddy, 2017; Uraon & Gupta, 2020), the psychological climate of an organization helps facilitate the interests of the employees, thus positively impacting various dimensions of employee commitment like affective commitment and team commitment. In the context of this study, a positive psychological green climate helps enhance the green behavioral intentions and attitudes of white-collar managerial professionals working in Pakistan's textile, fertilizer, and oil and gas sectors. To summarize, employees feel more committed to the environment when they believe that their organization is pro-environmental and takes sustainability and environmental protection with the same seriousness as their other strategies. These findings are also consistent with the social identity theory proving that employees align themselves psychologically in order to adjust to the corporate environmental strategy of an organization.

5.3.3 Hypothesis 3. Employee green commitment has a positive effect on green creativity

As hypothesized, there is a significant positive impact of employee green commitment on green creativity *(H3).* These findings indicate that when employees display a strong desire and concern towards the environment, they in turn generate novel and valuable pro-environmental ideas for the organization. This happens because highly committed employees tend to recognize the organization's values and goals and are more likely to put in a substantial amount of effort to help the organization achieve those goals. Historically, employee commitment has proven to improve performance and add value to the organization through employee determination, proactiveness, and a focus on quality (Andrew, 2017). The findings of our study are in accordance with previous literature which confirmed a positive relationship between employee commitment and employee creativity (Khalilzadeh et al., 2023). Likewise, these results also coincide with the findings of Song et al. (2023) and Afridi et al. (2023) proving that employees exhibit more green creativity at work when their organizations assist them in increasing their environmental commitment. This study demonstrated that when managers in Pakistan's manufacturing sector are highly committed towards their organization's green initiatives, they are more likely to come up with creative solutions to address the environmental issues that their organizations face.

5.3.4 Hypothesis 4. Green employee empowerment has a positive effect on green creativity

This study also demonstrated that green employee empowerment has a positive significant impact on green creativity, confirming the fourth hypothesis proposed *(H4).* These results align with the findings obtained by Hirmawan et al. (2023) and Khan et al. (2019) which showed that empowered employees tend to display high levels of self-confidence resulting in greater task performance and higher creativity levels. Additionally, our findings are also supported by Al-Hawari et al. (2021) and Ahmad et al. (2021) who previously showed how other GHRM initiatives like green training and compensation positively impact the green creativity of employees. This study establishes that managers in industries such as textile, oil and gas, and fertilizer experience a notable impact from green empowerment in terms of increasing their motivation, which leads to better idea generation and results in these employees finding creative green solutions for their organizations, such as developing environmentally friendly product variants.

5.3.5 Hypothesis 5. Psychological green climate and employee green commitment sequentially mediate the relationship between green employee empowerment and green creativity

Lastly, as was expected, this study established the sequential mediating roles of psychological green climate and employee green commitment between green employee empowerment and green creativity *(H5).* While, previous research has proven a partial sequentiaal mediation of psychological green climate and employee green commitment in the relationship between green HRM and employee green behaviours (K., 2023), and Afridi et al. (2023) have confirmed the sequential mediation of psychological green climate and employee green commitment between generative leadership and green creativity, this study is one of the initial studies to validate the sequential mediation of psychological green climate and employee green commitment between green employee empowerment and green creativity. Psychological green climate is an effective change that occurs when an organization empowers its employees to participate in green initiatives. This empowerment can take various forms, such as forming green teams and involving employees in decision-making regarding the organization's green initiatives. Organizations with a strong psychological green climate are eager to support environmental degradation causes and strive to protect the environment by becoming more environmentally conscious. Employees are more willing to work towards the company's green initiatives when they believe the company is devoted to environmental sustainability, which in turn enhances employee green commitment. Furthermore, employees who are committed to the company's green initiatives are more likely to seek out innovative green solutions to run operations, satisfy customers and assist organizations in meeting their green goals. This is particularly relevant for managerial employees who as compared to non-managerial employees are more involved in strategy formulation and implementation.

5.4 Theoretical Implications

The outcomes of the current study make a noteworthy contribution to GHRM literature. Firstly, the current study draws on the social identity theory and provides empirical evidence on the impact of green employee empowerment on green creativity in the manufacturing sector of Pakistan. The study confirms that green employee empowerment has a positive effect on green creativity. While earlier research on green employee empowerment employed theories such as

ability motivation opportunity theory (Rahman & Mansor, 2023) and self-determination theory (Amrutha & Geetha, 2023; Ashraful et al., 2021), the present study makes a significant contribution by utilizing the social identity theory in this realm. The social identity theory has proven to be resourceful in highlighting how employee identification with their environmental roles influences their green attitudes and behaviors by emphasizing the importance of social identity and group membership. Additionally, this theory provides context for how green employee empowerment emphasizes the role of the psychological green climate and employee green commitment in shaping pro-environmental behaviors like green creativity.

Secondly, the present study bridges another gap by clarifying the underlying psychological mechanisms between the relations of green employee empowerment and green creativity by utilizing the social identity theory in the manufacturing sector context. While previous studies have validated the mediating roles of constructs like green mindset (Shakil et al., 2023) and pro-environmental behavior (Ahmad et al., 2021) between GHRM initiatives and green creativity, the present study makes a valuable contribution to literature by being one of the initial studies to validate psychological green climate and employee green commitment as sequential mediators between this relationship.

While researchers examining HRM have been very interested in the benefits of different GHRM dimensions and there is ample research focusing on GHRM dimensions like “green recruitment”, “green training”, “green performance management” and “green reward management”; sufficient empirical data on one particular dimension, “green employee empowerment” is still lacking in literature (Amrutha & Geetha, 2023). Although earlier studies have demonstrated that green employee empowerment directly affects green behaviors (Amrutha & Geetha, 2023), the mediation pathway involving psychological green climate and employee green commitment has not yet been studied. The current study adds to the body of existing literature by examining the influence of green employee empowerment on green creativity through the same sequential mediating relationship that Afridi et al. (2023) have recently confirmed between generative leadership and green creativity, hence further validating their framework.

The present study is also one of the initial studies to provide empirical evidence that green employee empowerment affects psychological green climate which in turn enhances employee green commitment. The current study was grounded on the social identity theory and has established green employee empowerment, which has received insufficient attention in literature as a critical strategy for increasing employee green creativity. The present study also contributed methodologically by proposing and validating the sequential mediation of psychological green climate and employee green commitment between green employee empowerment and green creativity. Although, previously this specific sequential mediation has been tested by Afridi et al. (2023), the present study differentiates itself by investigating the combined effect with green employee empowerment which is an underrepresented construct in GHRM literature. This opens avenues for further research using psychological green climate and employee green commitment as sequential mediators between green employee empowerment and other green organizational outcomes.

5.5 Practical Implications

This study presents empirical support to the sequential mediation of psychological green climate and employee green commitment in the relationship between green employee empowerment and green creativity, hence offering several insightful implications for the managers in the manufacturing sector. It has been established that manufacturing organizations are under immense stakeholder pressure to take on pro-environmental initiatives and adopt green work processes (K., 2023). These organizations can only execute these green pursuits if their employees display green behaviors at work, and green creativity has proven to have a significant role to play. Fostering green creativity among employees is crucial for driving overall organizational innovation which enhances competitiveness, reduces costs along with fulfilling the organization's corporate social responsibility commitments (Nasifoglu Elidemir et al., 2020).

The findings of the current study present a number of valuable implications for HR practitioners working in the textile, fertilizer and oil and gas sectors. Firstly, the findings highlight the need to look beyond traditional GHRM initiatives like "green recruitment" and "green performance management", and focusing on empowering employees to participate in the decision-making

process regarding the organization's environmental endeavors. HRM practitioners should develop green empowerment strategies that involve employees in decision-making. Moreover, green employee empowerment can also be implemented by encouraging autonomy in finding solutions to environmental challenges. Given the high level of risk associated with the manufacturing sector since majority of employees work in production plants, it is imperative that employees are provided with the necessary guidance and mentoring throughout this process. This can be done by establishing regular communication channels such as team meetings and newsletters where employees can share their perspectives regarding the organization's green strategies. These team meetings can serve as a platform for conflict resolution, negotiation, communication as well as collaboration with other employees, stakeholders, and external partners like suppliers. Moreover, through green employee empowerment, these organizations can foster a culture of open communication where employees at every level and in every department feel comfortable voicing concerns and suggesting improvements to the existing green policies.

Manufacturing sectors such as textile, fertilizer, and oil and gas are major waste generators and contributors of various types of pollution (Ullah et al., 2008), hence it is critical for these organizations to empower their employees by delegating authority and responsibility to make decisions and take the necessary steps to achieve the organization's green goals. Research indicates a significant link between empowerment and training (Nawaz et al., 2014). Therefore, with regard to the textile industry specifically, HR practitioners can provide employees with training and development in order to enhance their knowledge on sustainable textile manufacturing practices. Similarly, in the fertile and oil and gas sectors, investing in training programs to increase employee awareness regarding environmental regulations and environmentally-friendly procedures can also be useful in the pursuit of empowering employees.

These trainings can include preliminary training to increase employees' understanding of major environmental issues, such as climate change, pollution and resource depletion, along with how manufacturing processes tend to intensify these issues (Amrutha & Geetha, 2023). These trainings can also include the long-term and short-term green goals of the organization such as minimizing waste generation, or conserving energy, along with the role the employees can play in helping achieve these goals (Yafi et al., 2021). Practical training sessions can also be extremely beneficial

where industry best practices for sustainably like recycling and energy conservation are explained. By the completion of these training sessions, employees must also have a thorough understanding of key environmental laws and regulations. Moreover, employees must also be educated about emerging green technologies and innovations in the manufacturing sector globally. The utilization of interactive presentations and videos, and case studies can help increase employee engagement, and illustrating real-life examples of environmental issues and their implications can make these training sessions more effective (Renwick et al., 2013).

The findings of this study can prove to be insightful for the board of directors and managers in devising strategies considering the importance of green employee empowerment validated through this research. By enabling and encouraging employees to take charge of green initiatives, the managers can foster a supportive organizational climate that prioritizes the environment. It is critical that these organizations recognize that green employee empowerment initiatives such as green teams and task-forces, as well as involving employees in green decision-making play a significant role in improving employee perception of their organization's dedication towards protection of the environment.

Effectively implementing green employee empowerment initiatives in the organization results in employees who are committed towards the environment. Employees who are committed towards the environment tend to actively support and engage in environmental initiatives which helps drive green innovation. Committed employees frequently go above and beyond to improve their green performance and find novel and original solutions regarding waste management and eco-conservation. Better waste management assists the organization in gaining a competitive edge by saving raw material costs, including packaging costs which means that the business needs to procure less materials (Amrutha & Geetha, 2023). Moreover, this can also help boost the image of the organization of being environmentally aware which can lead to increased business opportunities for the organization, as many international organizations prefer working with environmentally-conscious organizations. This is particularly prevalent in the textile sector where global clients give preference to those suppliers and manufacturers who have regard for the environment, and have adopted environmentally-friendly business practices (APTMA).

Empowering employees to participate in the organization's environmental initiatives can also strengthen the organizational culture by promoting accountability in the employees. These employees are also more likely to innovate and problem-solve, leading to creative solutions for the environmental challenges faced by the organization. Additionally, a positive psychological green climate may also help attract and retain environmentally-conscious talent, along with enhancing the reputation of the organization. This can ultimately prove to be integral in driving organizational success.

To summarize, the findings of this research highlight that it is important for HR practitioners to look beyond conventional GHRM initiatives like green recruitment, training, performance management and compensation and focus on empowering employees by giving them more authority and control in terms of the organization's environmental strategy. This can be accomplished by giving these employees more autonomy and involving them in the green decision-making process.

5.6 Limitations and future research directions

The current study has certain limitations that can serve as a foundation for future researchers who wish to carry out their research on the topic of green employee empowerment. Firstly, future studies could focus on different manufacturing sectors like automotive, pharmaceutical and FTB (food, beverages and tobacco). Moreover, it is advised that future studies concentrate on one industry at a time, such as the fertilizer industry. This can help them better understand how employees of a particular industry respond to green employee empowerment.

Furthermore, due to cultural differences between Pakistan and other countries, which can influence employee attitudes and behaviors, the current study may not be able to provide generalized results (Cagliano et al., 2011). As a result, future studies can test this research model in countries with different environmental ethics and standards from Pakistan. Additionally, the study used a cross-sectional with snowball and purposing sampling techniques, and the sample size of 226 was limited due to time constraints. Therefore, to improve the model's generalizability, more replication studies can test this research model on a larger sample size. We suggest that researchers in the

green employee empowerment realm should opt for longitudinal studies using the same model used in this study.

Although the current study used adequate statistical and procedural measures to rule out common method bias, the usage of only self-reporting measures still leaves room for common method bias. Therefore, in order to eliminate the common method bias, future studies can collect data from multiple sources. Additionally, while the current study has tested the framework on the theoretical foundation of the social identity theory, future studies can utilize different theoretical support to test the model in order to contribute to theoretical expansion.

Future studies can also broaden the model by assessing moderators such as "corporate social responsibility (CSR)", "green self-efficacy" and various personality traits such as "conscientiousness", "openness", and "extraversion". These personality types have been identified as strong motivators of pro-environmental behavior (Anwar & Clauß, 2021). Moreover, moderating variables such as "leadership styles", "innovation culture", "organizational culture", as well as employee attitudes like "emotional intelligence" and "proactive personality" can also be employed to strengthen the relationship between these constructs. Hence, future studies can put them to test. Future studies can also utilize "green work-life balance" and "green mindfulness" as possible mediators between green employee empowerment and green creativity. These constructs are relatively new to GHRM literature and thus underrepresented, but they are highly relevant to the framework of the study. Lastly, while this study contributed to the green employee empowerment literature by testing its impact on green creativity, future studies can incorporate variables such as "task-related green behaviour" and "green interpersonal citizenship behaviour".

5.7 Conclusion

This study highlights the significance of green employee empowerment in promoting psychological green climate, employee green commitment and green creativity among the white-collar employees of the Pakistani manufacturing industry. Moreover, the results obtained through this research indicate that green employee empowerment has a significant positive impact on green creativity, both directly, as well as through the sequential mediation of psychological green climate

and employee green commitment. The results also demonstrate a positive association between green employee empowerment and psychological green climate, along with psychological green climate being a significant predictor of employee green commitment. Lastly, employee green commitment. also proved to be a significant contributor of green creativity. In other words, this study establishes that when an organization empowers its employees by involving them in environmental strategy formulation and decision-making, these employees perceive the organization as one that cares about the wellbeing of the environment. This tends to increase employee commitment towards the environment as well as the organization's green initiatives, leading to employees developing innovative and environmentally friendly ideas, solutions, and workplace practices in order to reduce waste, conserve resources, and promote sustainability.

The current study contributes to our knowledge regarding the associations between green employee empowerment, psychological green climate, employee green commitment and green creativity. The relationship between green employee empowerment and green creativity has rarely been studied before, and the findings of this study indicate a strong link between these two constructs, making a significant theoretical contribution to the GHRM literature. Furthermore, previous studies have focused on other dimensions of GHRM such as “green recruitment”, “green training”, “green performance management”, and “green compensation”. However, the role of green employee empowerment has been underrepresented in the literature, and hence this study opens avenues for more research on green employee empowerment. In addition, psychological green climate and employee green commitment were tested as sequential mediators between green employee empowerment and green creativity in this study. The findings of this study indicate a significant sequential mediation of psychological green climate and employee green commitment between green employee empowerment and green creativity. This is yet another significant contribution to the literature, and it also opens the door to the incorporation of additional constructs as potential mediators in this relationship. Additionally, previous studies in this realm employed a conventional first generation statistical technique to determine the relationships between the variables (Amrutha & Geetha, 2023; Kularathne, 2020); however, to obtain more significant and insightful results, this study used PLS-SEM, which is a second generation technique to SEM (Richter et al., 2016).

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APPENDIX

Appendix 1: Survey Questionnaire

Dear Participant,
My name is **Zainab Amir**, and I am a postgraduate student at **NUST Business School**. For my thesis, I am examining the link between green employee empowerment, psychological green climate, employee green commitment, and green creativity. I am inviting you to participate in this research by completing the following survey.
This survey will take 5-7 minutes. Your response will be kept confidential hence if you choose to participate, please respond to the survey honestly. Participation is strictly voluntary, and you may refuse anytime. The data collected will remain confidential and used solely for academic purposes. Thank you for taking your time out in assisting me with this research. If you have any queries about this study or interested in the results of this study, you may contact me.

Sincerely,

Zainab Amir
Student of MSHRM2K22
NUST Business School
Sector H-12, Islamabad

Section 1: Demographic Information

1.	Gender	□ Male □ Female □ Prefer not to say
2.	Age	□ 18-24 □ 25-35 □ 36-50 □ 50-64 □ 64 and above
3.	Highest Qualification	□ Bachelors □ Masters □ PhD
4.	Industry/Sector	□ Fertilizer □ Oil & Gas □ Textile
5.	Job Position	□ Executive or C-level □ Manager or Director □ Professional or Technical □ Administrative or Supportive □ Skilled or Tradesperson □ Sales or Marketing
6	Experience	□ Less than 1 year □ 1-2 years □ 3-5 years □ 6-10 years □ 11 to 15 years
8.	City	□ Karachi □ Lahore □ Islamabad □ Faisalabad □ Other *(Please Specify)*

Section 2: Green Employee Empowerment

For each statement below please circle the appropriate responses:
1 = Strongly Disagree (SDA), 2 = Disagree (DA), 3 = Neutral (N), 4 = Agree (A), 5 = Strongly Agree (SA)

Green Employee Empowerment	**SDA (1)**	**DA (2)**	**N (3)**	**A (4)**	**SA (5)**
1. In my organization, green teams are being set up to tackle environmental problems.	1	2	3	4	5
2. In my organization, employees are actively involved in the process of determining environmental goals.	1	2	3	4	5
3. In my organization, employees are encouraged to give suggestions on environmental performance improvements.	1	2	3	4	5

Section 3: Psychological Green Climate

For each statement below please circle the appropriate responses:
1 = Strongly Disagree (SDA), 2 = Disagree (DA), 3 = Neutral (N), 4 = Agree (A), 5 = Strongly Agree (SA)

Psychological Green Climate	**SDA (1)**	**DA (2)**	**N (3)**	**A (4)**	**SA (5)**
1. My organization is keen to support environmental degradation causes.	1	2	3	4	5
2. My organization believes that it is crucial to safeguard the environment.	1	2	3	4	5
3. My organization is aiming to become more environmentally friendly.	1	2	3	4	5
4. My organization would like to be perceived as green entity.	1	2	3	4	5
5. In my organization, employees have a sensitive touch towards the environment.	1	2	3	4	5

Section 4: Employee Green Commitment

For each statement below please circle the appropriate responses:
1 = Strongly Disagree (SDA), 2 = Disagree (DA), 3 = Neutral (N), 4 = Agree (A), 5 = Strongly Agree (SA)

Employee Green Commitment	**SDA (1)**	**DA (2)**	**N (3)**	**A (4)**	**SA (5)**
1. I am committed to always implementing green behaviors at work.	1	2	3	4	5
2. If I don't implement green behaviors at work, I feel regret.	1	2	3	4	5

3. If I don't implement green behaviors at work, I feel guilty.	1	2	3	4	5
4. Spending time in implementing green behaviors at work makes me very happy.	1	2	3	4	5

Section 5: Green Creativity

For each statement below please circle the appropriate responses:
1 = Strongly Disagree (SDA), 2 = Disagree (DA), 3 = Neutral (N), 4 = Agree (A), 5 = Strongly Agree (SA)

Green Creativity	**SDA (1)**	**DA (2)**	**N (3)**	**A (4)**	**SA (5)**
1. I suggest new ways to achieve environmental goals.	1	2	3	4	5
2. I propose new green ideas to improve environmental performance.	1	2	3	4	5
3. I promote and champion new green ideas to others.	1	2	3	4	5
4. I develop adequate plans for the implementation of new ideas.	1	2	3	4	5

Appendix 2: Data Collection – List of Organizations

TEXTILE SECTOR
Interloop Limited
Style Textile
Yunus Textile Mills Limited
Mahr Textiles
FERTILIZER SECTOR
Fauji Fertilizer Company Limited
Fatima Fertilizer
Engro Fertilizers
OIL & GAS SECTOR
Oil and Gas Development Company Limited (OGDCL)
Mari Petroleum Company Limited
Pakistan Petroleum Limited
Pakistan State Oil (PSO)