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The impact of employees' green competence on ESG performance: The moderating effect of green reward payments and green transformational leadership.

CH.MO PROF.: ALBERTO LUPOI

RELATORE LAUREANDO: JALAL KHAN

MATRICOLA NO: 2043877

ANNO ACCADEMICO: 2023 – 2024

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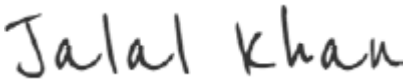

CONTENTS

LIST OF TABLES

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The concept of ESG centers on environmental, social, and corporate governance issues a firm must address to achieve higher performance (Lins, Servaes & Tamayo, 2017; Eccles & Klimenko, 2019). The environmental issues border on environmental pollution, climate change, and degradation of the environment; which are mainly caused by human activities. Therefore, it is necessary to curtail all human activities that constitute environmental issues, such as deforestation, emission of greenhouse gases, water and air pollution, and extractive activities (Friede, Busch & Bassen, 2015). The social issues border on all relationships a firm has with its internal and external stakeholders. The internal stakeholders are persons that are within a firm (such as shareholders and employees) and influence performance; while external stakeholders are those persons (such as suppliers, customers, and communities) who are external to a firm and influence the performance of the firm (Hoepner & Schopohl, 2018). Therefore, a firm ensures that it satisfies its internal and external stakeholders so as to achieve sustainable growth performance. The corporate governance issues border on ensuring that the management of corporations align with industry regulations towards maximizing the wealth of shareholders while adhering to responsible and ethical business practices. Corporate governance ensures that board members are adequately compensated, the board is gender and ethnic diverse, there is accountability, industry regulations are adhered to, and there is transparency in financial reporting (Khan, Serafeim & Yoon, 2016; Grewal, Hauptmann & Serafeim, 2020).

ESG was developed as an approach to demonstrate that corporate performance goes beyond financial metrics, thus challenging traditional business analysis that measures firm performance using financial metrics (Friede, Busch & Bassen, 2015). Earlier in the literature, Milton Friedman opposed the practice of corporate social responsibility. He argued that a firm should focus on maximizing wealth for its shareholders; hence, firms should be less focused on their non-financial performance. This encourages the assessment of firm using financial indicators such as returns on investments (ROI), returns on assets (ROE), returns on capital employed (ROCE), gross margin, revenue, debt to equity ratio, and net income. They are numeric thus makes them relevant for analyzing quantitative values and performances of a business. These financial-based indicators make it possible to conduct a comparative assessment of performances across multiple firms. This placed huge importance that listed firms should regular provide their financial statements. Yet,

these indicators cannot be used to evaluate non-financial performance of a firm such as a firm's brand reputation, a firm's employee satisfaction, employee engagement, workplace diversity, and environmental performance. Studies from the 1980s show that corporate performance can be analyzed using financial and non-financial indicators (Gavrea, Ilies & Stegerean, 2011). To highlight the relevance of non-financial performance indicators have been developed. From the 1980s, academic researchers, business managers, and consulting firms have explored non-financial metrics for assessing firm performance. This body of knowledge found it necessary to not only measure firm performance using financial metrics, but also measure performances of firms using non-financial indicators (Gavrea, Ilies & Stegerean, 2011). Several non-financial indicators have been developed to measure firm performance. Boulianne (2000) grouped them into five integrative models, based on their degree of complexity. They are organizational effective model, performance pyramid model, the balanced scorecard model, the stakeholders approach model, and performance measurement matrix model. The organizational effectiveness model borders on the overall effectiveness of a firm towards the achievement of its goals and objectives. This non-financial performance indicator recognizes employee satisfaction, innovation, productivity, and efficiency as key components of non-financial performance indicators of a firm. The performance pyramid model considers the performance of a firm across various levels of organization or departments. Such non-financial performance indicator considers the hierarchy of performance across these departments and how these performances influenced the overall capacity of the firm to achieve its goals and objectives. The performance measurement matrix model of non-financial performance indicators requires the creation of a performance matrix which measures the strategic objectives of the firm. The performance measurement matrix model aids a firm to track its performance and progress towards recognizing aspects of the business that require improvement by mapping out association between different performance metrics and firm's strategic priorities. The stakeholder approach model focuses on measuring the various needs and interests of a firm's stakeholders which includes organizational employees, the managers, customers, and shareholders. Such category of non-financial performance indicators assess a firm's performance based on how the needs of these various stakeholders are met. Kaplan and Norton developed the Balanced Scorecard framework which demonstrates firm performance using four both financial and non-financial indicators, which are financial, customer, internal processes, and learning and growth (Morin & Audebrand, 2003).

During the 1960s and 1970s, a group of investors shifted their investment decision from financially based to socio-environmental aspects, as there were environmental consciousness, change in social values, and increasing concerns about corporate ethics (Lins, Servaes & Tamayo, 2017; Syed, 2017). These events metamorphosed to globally accepted standards that corporations and businesses must its environmental, social, and corporate governance issues during the 21st century (Eccles, Ioannou, & Serafeim, 2014; Revelli & Viviani, 2015). ESG has evolved over the years, becoming an essential part of business and asset investment today (Sayema, Dalilawati & Norhaya, 2017). Today, there is steady shift in business analytics from financial based to ESG based, which encourages the adoption of ESG policies across businesses globally (Schroders, 2017). Consumers are increasingly becoming emotionally attached to services and products that encourage environmental sustainability, as well as in whose businesses practice ethical standards, diversity, and inclusivity (Friede, Busch & Bassen, 2015; Wang et al., 2023). In recent times, top ESG-performing businesses are outperforming lowly performing ESG businesses (Whelan et al., 2021; Horan et al , 2022; Xu et al., 2022; Li & Zhang, 2022). This is because ESG performing firms have less constraints to raise funds, while top ESG performing firms have higher goodwill which can translate to higher revenue (Khan, Serafeim & Yoon, 2016; Lee & Faff, 2016). It is important that ESG performing companies have employees that are green competent. This is because an organizational workforce is required to implement management policies and strategies (Ahmad et al, 2023; Cabral & Dhar, 2021). Likewise, if an employee is not green competent, it becomes less possible for an ESG performing firm to fully achieve its green objectives and policies (Kaur & Sharma, 2015; Khan et al., 2017). This underlines employee green competence (EGC) as a critical factor that determines whether the green objectives and goals of an organization will be achieved. It is beneficial to the firm, stakeholders, and employees. Firms that encourage EGC enjoy the benefits of cost reduction, innovation and competitive advantage, increase in reputation and goodwill, and higher consumer satisfaction. EGC helps employees to improve on their ability, by being innovative, and adjusting their individual value systems to align with environmental sustainability requirements; which do not only promote firm revenue but puts these workers to earn higher wages, financial and non-financial rewards, and various forms of employee compensation (Mishra, Dhar & Varkkey, 2017).

The green competence of an employee demands that an employee has the knowledge and capacity to carry out green activities in the workplace, has the adequate motivation to carry out the activities, and has the access and resources to fully perform the activities (Renwick, D. W., Redman, T., &

Maguire, 2013; Chen, Chang & Lin, 2023). This implies that a unique set of employees, human resources management practices, and leadership style are required in organizations that are green. These measures require an effective green human resource management framework that involves selecting and hiring persons with green values, green development and training, green evaluation, green reward, and green leadership (Jabbour, Santos, & Nagano, 2010; Zibarras & Coan, 2015; Chen, Chang & Lin, 2023; Dhar & Mishra, 2023). Through green human resource management (GHRM), organizations can communicate their green goals and objectives to their employees to help them become green competent. The role of reward and leadership have been highlighted in academic literature. Rewards motivate the commitments and productivity of organizational employees. Likewise, green rewards can help employees to stay dedicated to green job delivery hinged on the understanding that sustainable efforts are rewarded; thereby stimulating green competence. As such, an employee who is green rewarded is encouraged to increase green and sustainability knowledge and capacity. More so, green transformational leadership enhances the green competence of an employee. Similar to the transformational model of leadership, green transformational leaders are inspirational, stimulate the intellectual capacity of subordinates through employee participation, are charismatic, visionary, and flexible to all types of employees. Such traits are required in green organizations to help employees receive the relevant motivation and intellectual capacity to competently perform green activities in the workplace. Employees are more competent to execute green activities in the workplace if there are green rewards, and green transformational leadership. Yet, it is essential to ascertain the extent to which green rewards and green transformational leadership can spur the green competence of employees.

1.2 Research Problem

The background of the study indicates that there is a relationship between green transformational leadership (GTL), green reward payment (GRP), employee green competence (EGC), and ESG performance of firms. Studies in the literature have shown that organizational employees who possess green competence can positively contribute to the ESG performance. However, the extent of this influence may vary based on factors such as the presence of green transformational leadership and the implementation of green reward payment systems. Understanding these dynamics is crucial for enhancing or sustaining ESG performance within firms. It is imperative to ascertain the true relationships between all four variables so as to expand on the literature of ESG.

Expanding on this premise, it becomes evident that delving into the intricate connections between green transformational leadership, green reward payment, employee green competence, and ESG performance is vital for comprehensive understanding. By elucidating these relationships, researchers can provide actionable insights for organizations seeking to improve their sustainability practices. Several empirical studies in the literature provide insights on the relationships between all four variables; however, with some shortcomings that this study seeks to address. For instance, there are studies which found that EGC determines firm performance (such as Zibarras & Coan, 2015; Do & Mai, 2022; Chen, Chang & Lin, 2023, Dhar & Mishra, 2023; Nyathi & Kekwaletswe, 2023).

Albeit, only few studies measured firm performance using ESG metric. Indeed, while existing research has highlighted the importance of employee green competence in driving firm performance, there remains a gap in the literature concerning the specific impact of EGC on ESG performance. This study aims to fill this gap by exploring the direct relationship between EGC and ESG performance, thereby contributing to a more holistic understanding of sustainability within organizational contexts. Also, empirical studies in the literature show that green rewards influence EGC (such as Mwangi & Kwasira, 2019; Kuo et al., 2022; Wang, Li & Li, 2023). Also, empirical studies also show that green transformational leadership spurs EGC (such as Cabral & Dhar, 2021; Huang, Ting & Li, 2021; Mangenda et al., 2022). By building upon the findings of previous research and addressing the limitations therein, this study seeks to provide a comprehensive analysis of the interrelationships between green transformational leadership, green reward payment, employee green competence, and ESG performance. Through this endeavor, it aims to offer valuable insights that can inform organizational management practices and contribute to the advancement of sustainable business strategies.

However, studies on green transformational leadership and ESG are few, and need to be further explored. It is also observed that there are empirical studies which found that green transformational leadership moderates the association between EGC and ESG (Zhu & Huang, 2023; Sachdeva & Singh, 2023; Li, Y., Wang & Li, 2023; Zhang & Wang, 2023); there is no empirical study on whether green rewards moderates the association between EGC and ESG. Albeit, the study by Zhang and Chen (2023) which showed that green rewards moderates the association between ESG and green innovation among Chinese firms suggests that green rewards moderates the association between EGC and ESG. Yet, it can observed that studies which analyzed

the moderating effects of green rewards and green transformational leadership on EGC and ESG suggest that the effects of EGC on ESG can be enhanced by green transformational leadership and green rewards. This makes studies that analyzed EGC and ESG incomplete as they require to ascertain if there relationship can be enhanced by green transformational leadership and green rewards. As such, this study finds it imperative to provide robust insights on the relationships between green rewards, green transformational leadership, EGC, and ESG performance, by analyzing the relationships between ESG and EGC while investigating whether green transformational leadership and green rewards moderate the relationship.

In summary, while existing literature has explored the relationships between green rewards, green transformational leadership, environmental, social, and governance (ESG) criteria, and ESG performance, there remains a notable gap in understanding the moderating effects of green rewards on the relationship between EGC and ESG, as well as the need for further investigation into the relationship between green transformational leadership and ESG. Therefore, this study aims to provide robust insights into these relationships by analyzing the connections between EGC and ESG while examining the moderating effects of green transformational leadership and green rewards.

1.3 Research Objectives

Consequent on the statement of research problem, this study will analyze the impact of EGC on ESG performance of businesses while incorporating the moderating effect of reward payments and green transformational leadership. This broad objective comprises three specific objectives which are to:

1. Ascertain the relationship between EGC and ESG performance.
2. Analyze the moderating effect of green transformational leadership on the relationship between EGC and ESG performance.
3. Investigate the relationship between EGC and ESG performance is moderated by green reward payments.

1.4 Research Questions

Consequent on the specific research objectives, this study is guided by three research questions which are stated as follows:

1. What is the relationship between EGC and ESG performance?

2. Does green transformational leadership moderate the relationship between EGC and ESG performance?
3. Is the relationship between EGC and ESG moderated by green reward payments?

1.5 Hypothesis

This study formulates three research hypotheses to provide valid answers to the research questions. The hypotheses are stated below:

H_1: There is a relationship between EGC and ESG performance.

H_2: Green transformational leadership moderates the relationship between EGC and ESG performance.

H_3: There is a relationship between EGC and ESG performance is moderated by green reward payments.

1.6 Significance of the Study

This study offers valuable insights for understanding the subject matter on ESG. Today, businesses rely on good ESG rating to maximize revenue and attract investors. Yet, ESG goes beyond investing, as it extends to employee green competence which assesses the commitment of employees to sustainability, their level of green training and development, their green reward payments, and type of green leadership they are exposed to at the workplace. This study analyzes to what extent does employee green competence affects green performance, and if green transformational leadership helps employee green competence to promote green performance. This study does not only sheds light on the significance of ESG in the contemporary business landscape but also delves deeper into its multifaceted implications. In today's competitive environment, businesses are increasingly reliant on favorable ESG ratings not just for financial gains but also to attract investors who prioritize sustainability. However, the scope of ESG transcends mere investment considerations; it encompasses employee green competence, a critical factor that evaluates employees' dedication to sustainability, their proficiency in green practices due to training and development, the incentives they receive for environmentally friendly actions, and the influence of green leadership within the organization. By exploring the correlation between employee green competence and green performance, this study addresses a crucial gap in the existing literature, offering valuable insights into the dynamics of sustainable practices within organizational settings. Furthermore, it investigates the role of green transformational leadership

in nurturing employee green competence and its subsequent impact on enhancing green performance. The implications of this research extend beyond theoretical discourse, offering actionable recommendations for organizational management. By understanding the interplay between employee green competence, leadership styles, and performance outcomes, companies can develop informed strategies to foster a culture of sustainability. Moreover, insights into effective green reward systems can incentivize and reinforce environmentally responsible behaviors among employees, thereby facilitating the transition towards a more sustainable future. Therefore, the results from this study is beneficial to organizational management about green practices, employee green competence, green transformational leadership, and green reward payments.

1.7 Scope of the Study

This study analyzes the moderating effects of green transformational leadership and green reward payments on the relationship between ESG performance and employee green competence. This study is conducted in Italy which is one of the top thirty performing ESG countries on the globe. Further reason for selecting the country owes to convenience to the researcher as the study was conducted during an MBA programme in Italy. This study sources data primarily using well structured questionnaire that incorporate the research questions of the study. The data are analyzed using quantitative methods such as structural equation method, correlation, and t-test. The SEM is a statistical technique used to analyze relationships between latent and observed variables. This is one major benefit of the SEM technique, which enables latent variables and empirically analyze existence of relationships between each other, or with observed variables. Yet, there are variants of SEM which includes confirmatory factor analysis (CFA), path analysis, fully structural equation model (FSEM), and partial least squares, structural equation modeling (PLS-SEM). The CFA variant of factor analysis is used to analyze the first research question of the study towards determining if there is a relationship between EGC and ESG performance. The second and third research questions are analyses using the PLS-SEM technique is used, which is a type of structural equation modeling which is used for analyzing relationships between latent and observed variables (Lohmoller, 1989).

1.8 Definition of the Terminologies

ESG: This is an acronym that represents the environmental, social, and corporate governance issues that a firm must address. It originally evolved as an alternative means to assess the performance of a business.

Employee Green Competence: This is a term that is associated with ESG. It as the capacity of organizational workers to carry out tasks in a sustainable and environmentally friend manner. It is an essential factor needed to achieve greening in an organization. It evolved as firms adopted ESG practices. With this, firms found it necessary to internalize the concept of green in their business operations, while recognizing the need for EGC to achieve their green goals and objectives. To ensure that employees are green competent, firms have adopted gree frameworks towards ensuring that employees with knowledge and attitude towards sustainability are selected, green trained, green rewarded, and integrated within the firm's workforce towards ensuring that all jobs executed in the workplace promote sustainability. EGC requires that in green organizations, employee are knowledgeable and are aware about sustainability, and have the right behaviour and attitude to perform green activities in the workplace, towards achieving green goals and objectives of the firm.

Green Transformational Leadership: This is a leadership model that adopts techniques and characteristics of the traditional transformational leadership style towards helping to achieve the green objectives of a firm by motivating employees to be green competent. Thus, it has two components which are the traditional transformational leadership style and greening. It focuses on achieving the sustainability goals of a firm using traditional transformational transformational leadership style.

Green Reward Payment: This is defined as a method used to incentivize sustainably responsible behaviour among organizational workers. GRP emerged as a business practice due to the rise in sustainability concerns. It leans on traditional reward system which in itself adopts financial and non-financial rewards to motivate desirable behaviour from organizational workers. However, they differs from traditional reward system by focusing on sustainability; yet, they both tie rewards to performance, as well as focus on motivating desirable behaviour from organizational workers using financial or (and) non-financial rewards. GRPs are broadly grouped into financial and non-financial rewards. The specific types include green bonuses which are financial rewards for employee green activities; green vouchers which are non-financial rewards for employee green activities; green recognition which is a non-financial reward; green training which is a non-financial reward; and

green flexibility which is a non-financial reward that permits employees to create their work schedules (such as work from home) in sync with personal well-being and environmental benefits (such as less consumption of carbon emissions).

CHAPTER TWO: LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Review of ESG Performance

The concept of ESG is an acronym that represents the environmental, social, and corporate governance issues that a firm must address (Lins, Servaes & Tamayo, 2017). It originally evolved as an alternative means to assess the performance of a business (Sonko & Sonko, 2023). While ESG is one of the most prominent business practices today, it has been previously practiced during the 18th century when humanitarian-driven investors who formed their investment decisions borne out of the working conditions of organizational workers (Clark, Feiner & Viehs, 2015). While ESG was not a prominent factor for investment decisions during the 18th century, investors have increasingly shown concern and commitments towards non-financial performance of a business particularly with the dawn of the twentieth century. For instance, in 1953 American economist Howard Bowen wrote the first book on corporate social responsibility (CSR) in his book "*Social Responsibilities of the Businessman*" wherein he argued that firms and businesses should be socially responsible (Khan, Serafeim & Yoon, 2016). The concept of CSR has served as a strong practice that evolved to ESG. Bowen's argument that firms should engaged in CSR is hinged on the notion that businesses and corporations do their business and make profit from the society; hence, should be committed to giving back to the societies (Friede, Busch & Bassen, 2015).

Yet in 1970, Milton Friedman responded to the rising demands that businesses should engage in CSR when he published his article "*The Social Responsibility of Business is to Increase its Profits*" who argued that the primary objective of a firm should be maximizing business profit (Friedman, 1970). Friedman opposed the concept of CSR while noting that it constitutes as tax against business profitability, which reduces the capacity of businesses to maximize shareholders' investments (Boatright, 2019). He further criticized CSR practice on the notion that if business managers engaged in CSR, it would create agent-principal problem where the actions of managers do not align with the interests of business owners; which further breaches corporate governance ethics. Therefore, Friedman notes that business managers who are committed to CSR practices should donate their personal wealth, and not the funds of business owners. Implicit in Friedman's argument is that firm financial performance should be the focus of every business. (Friedman, 2007) Yet, social and environmental enthusiasts of the era responded to Friedman's view while stressing that businesses are not only meant to take care of shareholders' needs but also extending to other

stakeholders such as their immediate society, suppliers, employees, and the environment as these numerous stakeholders influence firm profitability (Grewal, Serafeim & Yoon, 2016). Therefore, firm managers should not only focus on maximizing wealth for business owners but should also contribute towards environmental and societal well being. Throughout the twentieth century, ESG was ethically assessed and thereby debated (Henderson, 2005; Grewal, Serafeim, & Yoon, 2016).

At the twenty-first century, the notion of ESG became globally accepted; thereby evolving from a theoretical debate to globally acceptable practice. This occurred when socially responsible investing (SRI) became prominent with the rise of social investors who employ various social investing strategies such as screening investment opportunities to ascertain if they align with sustainability, analyzing firms based on their sustainability ratings, engaging with shareholders to influence their perspectives about sustainability, and investing in green mutual funds and green bonds (Lykkesfeldt & Kjaergaard, 2022). SRI has motivated the rise in sustainability ratings agencies such as carbon disclosure project (CDP), global reporting initiative (GRI), RepRisk, sustainability accounting standards board (SASB), and sustainalytics. International organizations such as the World Economic Forum (WEF) and the United Nations have helped to increase popularity in ESG particularly with the adoption of the Sustainable Development Goals (SDGs) which contain 17 sustainability goals to be achieved by year 2030. Top corporations such as BlackRock, Microsoft, Nestle, and IBM have championed and campaigned for ESG practices, thereby advancing its popularity and practice (Eccles, Ioannou & Serafeim, 2014; Busch, Bauer & Orlitzky, 2016).

The environmental issues border on environmental pollution, climate change, and degradation of the environment; which are mainly caused by human activities. Therefore, it is necessary to curtail all human activities that constitute environmental issues, such as deforestation, emission of greenhouse gases, water and air pollution, and extractive activities (Friede, Busch & Bassen, 2015). The social issues border on all relationships a firm has with its internal and external stakeholders. The internal stakeholders are persons that are within a firm (such as shareholders and employees) and influence performance; while external stakeholders are those persons (such as suppliers, customers, and communities) who are external to a firm and influence the performance of the firm (Hoepner & Schopohl, 2018). Therefore, a firm ensures that it satisfies its internal and external stakeholders so as to achieve sustainable growth performance. The corporate governance issues border on ensuring that the management of corporations align with industry regulations towards

maximizing the wealth of shareholders while adhering to responsible and ethical business practices. Corporate governance ensures that board members are adequately compensated, the board is gender and ethnic diverse, there is accountability, industry regulations are adhered to, and there is transparency in financial reporting (Khan, Serafeim & Yoon, 2016; Grewal, Hauptmann & Serafeim, 2020).

In recent times, there is steady shift in business analytics from financial based to ESG based, which encourages the adoption of ESG policies across businesses globally (Schroders, 2017). ESG is currently perceived as a set of ethical standards used to understand the behavior of a corporate business, towards three major factors: environmental, social, and governance (Georg, 2014). Environmental, social and governance factors like climate, sustainability, human rights, consumer protection, animal welfare, and gender equality have become acknowledged as important determinants of corporate performance (Kiehne, 2019). Sustainability is increasing becoming a central factor in today's investment decision. Hence, many institutional asset owners, retail investors, and consumers are increasing factoring ESG dimensions when making business decision (Sayema, Dalilawati & Norhaya, 2017). Several asset managers are channeling corporate business strategies to become ESG compliant. Nearly 90% largest fund managers have adopted the United Nations' Principle towards Responsible Investment (PRI), which emphasize the growing relevance of ESG initiative in corporate business (Schroders, 2017). Recent data shows that top ESG-performing businesses are outperforming lowly performing ESG businesses (Whelan et al., 2021; Horan et al , 2022; Xu et al., 2022; Li & Zhang, 2022). This is because ESG performing firms have less constraints to raise funds, while top ESG performing firms have higher goodwill which can translate to higher revenue (Khan, Serafeim & Yoon, 2016; Lee & Faff, 2016). More so, consumers are increasingly recognizing the importance of sustainability. Hence, consumers patronize services and products that promote environmental sustainability, as well as in whose businesses practice ethical standards, diversity, and inclusivity (Friede, Busch & Bassen, 2015; Wang et al., 2023).

ESG started in the US and Europe and has become a globally recognized business practice. Yet, there are countries and firms that have poor ESG performance in recent time, which demonstrates that there are challenges of adopting ESG practices. Based on country data, Norway, Switzerland, Denmark, Finland, and Sweden have consistently ranked 1-5 respectively on ESG between 2018 and 2022; while Somalia, Yemen, Syria, South Sudan, and Afghanistan consistently ranked the five least ESG performing countries between 2018 and 2022 (see table 2.1). This shows that Africa and

Western Asian countries rank bottom on ESG performance thereby implying that ESG adoption in these countries faces strong constraints; while Northern European countries have demonstrated least constraints in adopting ESG thereby becoming the best ESG performing countries. Additional data shows that the US and Western European countries have ranked outside top ten ESG performing countries between 2018 and 2022 (see table 2.2), which suggests that these countries are faced with relatively higher constraints to adopt ESG.

Table 2.1: Top five ESG performing countries and least five ESG performing countries

Country	2018	2019	2020	2021	2022
Norway	1 (9.5)	1 (9.5)	1 (9.5)	1 (9.5)	1 (9.5)
Switzerland	2 (9.4)	2 (9.4)	2 (9.4)	2 (9.4)	2 (9.4)
Denmark	3 (9.3)	3 (9.3)	3 (9.3)	3 (9.3)	3 (9.3)
Finland	4 (9.2)	4 (9.2)	4 (9.2)	4 (9.2)	4 (9.2)
Sweden	5 (9.1)	5 (9.1)	5 (9.1)	5 (9.1)	5 (9.1)
Somalia	179 (1.2)	179 (1.2)	179 (1.2)	179 (1.2)	179 (1.2)
Yemen	180 (1.1)	180 (1.1)	180 (1.1)	180 (1.1)	180 (1.1)
Syria	181 (1.0)	181 (1.0)	181 (1.0)	181 (1.0)	181 (1.0)
South Sudan	182 (0.9)	182 (0.9)	182 (0.9)	182 (0.9)	182 (0.9)
Afghanistan	183 (0.8)	183 (0.8)	183 (0.8)	183 (0.8)	183 (0.8)

Source: Global Corruption & ESG Indexes website https://risk-indexes.com/esg-index/

Table 2.2: ESG performance across selected Western European countries and the US

Country	2018	2019	2020	2021	2022
US	29 (63.9)	30 (63.7)	31 (63.5)	32 (63.3)	33 (63.1)
England	11 (71.6)	12 (71.4)	13 (71.2)	14 (71.0)	15 (70.8)
Italy	25 (66.1)	26 (65.9)	27 (65.7)	28 (65.5)	29 (65.3)
Germany	8 (73.6)	9 (73.4)	10 (73.2)	11 (73.0)	12 (72.8)
France	16 (70.1)	17 (69.9)	18 (69.7)	19 (69.5)	20 (69.3)
Belgium	14 (70.6)	15 (70.4)	16 (70.2)	17 (70.0)	18 (69.8)

Source: Global Corruption & ESG Indexes website https://risk-indexes.com/esg-index/

Data from Sustainalytics.com show that most Europe firms have moderate ESG performance with a few firms have strong ESG performance (see table 2.3). Studies in the literature have examined causes for poor ESG performance across countries and corporations. Several factors have been identified for differences in ESG performance across countries and firms. Leadership is a major factor, as the leadership of a country or firm determines the adoption of ESG practices. Zhu and Huang (2020) note that leadership is essential for improved ESG performance in any organization as a leader offers direction and support to organizational workers on towards recognizing and

maintaining the ESG goals of the firm. Chen et al. (2020) stress that organizational managers subordinates on how to deliver organizational ESG goals. Incentives and rewards are lacking in countries and firms with low ESG performance. This assertion stems from the recognition that financial and non-financial rewards influence employee determination and productivity, by stimulating employee satisfaction and commitment. Also, failure to understand the implications of ESG performance on firm financial performance explains why firms have low ESG performance. Consumers patronize services and products that promote environmental sustainability, as well as in whose businesses practice ethical standards, diversity, and inclusivity (Friede, Busch & Bassen, 2015; Wang et al., 2023). Firms with higher ESG performance can secure finds easier than firms with lower ESG performance (Khan, Serafeim & Yoon, 2016; Lee & Faff, 2016). Yet, the ability of firms to recognize the financial benefits of ESG determines their commitments towards addressing ESG issues in the workplace (Li, Zhang & Zhang, 2020; Kim & Kim, 2020).

Table 2.3: ESG performance from selected European firms

Firm	ESG rating	Remark
Bayer AG	27.4	Medium ESG risk
NOKIA	9.8	Negligible ESG risk
Nestle	27	Medium ESG risk
Volkswagen	26.4	Medium ESG risk
UNILEVER	23.6	Medium ESG risk
ENI	29.2	Medium ESG risk
BASF	25.2	Medium ESG risk
Siegfried Holding	18.3	Medium ESG risk
Novartis AG	15.8	Low ESG risk
HSBC Holdings	24.7	Medium ESG risk
Airbus SE	25.6	Medium ESG risk
Siemens AG	28	Medium ESG risk
ASML Holding	29.6	Negligible ESG risk
Total energies	27.3	Medium ESG risk

Source: https://www.sustainalytics.com

2.1.2 Review of Employee Green Competence

Employee Green Competence (EGC) is an essential factor needed to achieve greening in an organization. Jabbour, Santos and Nagano (2010) define it as the capacity of organizational workers to carry out tasks in a sustainable and environmentally friend manner. The history of EGC can be traced the 19th century when environmental sustainability became an increasing concern, notably with the emergence of Bowen's corporate social responsibility during the 20th century, till the 21st

century when investors, corporations, and international organizations increasingly recognized the importance of sustainability (Zibarras & Coan, 2015; Chen, Chang & Lin, 2023). With this, firms found it necessary to internalize the concept of green in their business operations, while recognizing the need for EGC to achieve their green goals and objectives (Kaur & Sharma, 2015; Khan et al., 2017). To ensure that employees are green competent, firms have adopted GHRM frameworks towards ensuring that employees with knowledge and attitude towards sustainability are selected, green trained, green rewarded, and integrated within the firm's workforce towards ensuring that all jobs executed in the workplace promote sustainability (Jabbour, Santos, & Nagano, 2010; Dhar & Mishra, 2023).

EGC requires that in green organizations, employee are knowledgeable and are aware about sustainability, and have the right behaviour and attitude to perform green activities in the workplace, towards achieving green goals and objectives of the firm. From the foregoing, EGC involves multiple factors which collectively describe the extent to which an employee possesses green knowledge and qualified to work in a green firm, while receiving green training, green rewarded, and green motivated to effectively carry out green tasks in line with the firm's green objectives and goals (Guerci & Carollo, 2016). Studies in the literature have decomposed the EGC concept into multiple factors. For instance, there is the AMO classification by Renwick et al. (2013) which opines that EGC can be explained by three factors namely ability, motivation, and opportunity. Ability centers on an employee's capabilities, skills, and knowledge to carry out duties that are pro-sustainability. Motivation borders on an employee's intentions, commitment, and willingness to perform tasks in the workplace that support sustainability. Opportunity refers to an employee's support system and access to carry out jobs in the workplace that are environmentally friendly. There are other EGC classifications, which include the ESCO classification by the European Commission and the classification by Chen, Ma and Liu (2015), The ESCO classification comprises of 5transversal green skills, and 195 green knowledge, 381 green skills employees in Europe should acquire by 2050. Therefore, it aims to enhance greening and ESG adoption across European countries, while ensuring that by 2050 employees are green competent. The classification by Chen, Ma and Liu (2015) identifies fix factors that explain EGC which are green skills, green abilities, green knowledge, green awareness, green behavioir, and green attitude; which are relevant in helping a firm achieve competitive advantage.

Literature identifies importance of EGC; which makes it important that organizations should endeavour to improve its EGC level in the workplace. EGC is beneficial to the firm, stakeholders, and employees. It lowers a firm's carbon footprint, and creates an opportunity for creativity and innovation in the workplace which translates to cost reduction, competitive advantage, increase in reputation and goodwill, and higher consumer satisfaction (Afsar, Badir & Kiani, 2020). Employees with a strong green competence contribute to reducing an organization's ecological footprint, fostering innovation in sustainable practices, and enhancing overall corporate reputation (Bissing-Olson et al., 2013; Ahmad et al., 2023). EGC helps employees to improve on their ability, by being innovative, and adjusting their individual value systems to align with environmental sustainability requirements; which do not only promote firm revenue but puts these workers to earn higher wages, financial and non-financial rewards, and various forms of employee compensation (Mishra, Dhar & Varkkey, 2017). Hinged on the numerous benefits of EGC, it is imperative that organizations must be committed to integrating and improving the green competence of their workforce. Foremost, an effective GHRM must be put in place to ensure green selection, green training, green rewards, and green evaluation of employees. Also, the leadership of the organization must lean towards green practices while designing strategic policies and supervision for effective EGC development. EGC performance must be measured and audited to determine areas for improvements and rewards for effective productivity (Alshammari & Almutairi, 2020).

EGC has a psychological connotation, as the term "competence" is a psychological construct that determines the capacity of a person to execute a thoughtful intention (Kim et al., 2017). Competence focuses on acquiring knowledge and skills, and having the intention to apply the knowledge into action (Fergusson, 2022). An employee who is green competent has the knowledge and skills about sustainability, and is energized, motivated, and resilient to contribute in organizational tasks that promote sustainability of the environment (Boiral, Talbot & Paillé, 2015; Kim et al, 2017). A green competent employee has green values which are intrinsically held beliefs towards promoting sustainability. Green values of an employee can be personally developed encouraged in the workplace through training and development (Dhar & Mishra, 2023). Also, a green competent employee experiences psychological green climate which is a strong belief that the organization will provide necessary support towards green initiatives and practices. This helps an employee to gain trust in the management thereby addressing any ambiguity about the firm's position on green initiatives (Norton et al., 2017). Another psychological aspect of EGC focuses on the positive affect of organizational employees in terms of an employees feelings, moods, and

emotions towards greening objectives and goals of the firm (Zhang, Ren & Tang, 2023). Within the borders of positive affect, a green competent employee has the positive feelings, moods, and emotions towards greening objectives and goals of the firm, which creates job satisfaction, motivates, and fosters organizational commitments towards engaging in office tasks that promote environmental sustainable (Bissing-Olson et al., 2013; Norton et al., 2017).

2.1.3 Review of Green Reward Payments

Green Reward Payments, otherwise referred in this study as GRP, is a method used to incentivize sustainably responsible behaviour among organizational workers. GRPs are not necessarily in themselves green, but are cash and non-cash payments made to employees for participating in activities that promote sustainability (Beck-Krala & Klimkiewicz, 2018). They evolved in Europe and America during the 20th century when environmentalists expressed concerns towards environmental pollution. Green businesses adopted GRP as a strategy for attracting and retaining employees who demonstrated concerns about the environment, pollution, and biodiversity. As such, GRP was developed to align the green objectives of a firm with green-centered employees in a win-win situation that helps firms to achieve its designed sustainable goals while compensating employees for green productivity. Early pioneers of GRP are recycling firms, as well as renewable energy firms, and organic farming businesses who sought various means to green rewards employees for green productivity. (Recyclingbins, 2019) While there is no exact evidence of the first business organization to employ green reward payments, events from the twentieth century show that a UK cosmetic firm, Body Shop employed green reward payment tin the 1980s to reward its employees for engaging in green activities such as environmental volunteering, using public transport system, and recycling products. These green reward payments included paid leave, gift vouchers and cash bonuses (The Body Shop, 2020). More so, during the 1990s, US clothing firm Patagonia employed green reward payment system to reward its workers towards lowering carbon emissions via activities such as walking to the office, cycling to work, and carpooling. The rewards provided included bus passes and free bicycles (Antavo, 2020). Also, technology consulting firm IBM designed green reward payments during the 2000s as a scheme to motivate its employees towards participating in sustainable activities, through lowering carbon emissions at home and at work (Shaw, 2020). Cash rewards, recognitions, awards, and trainings were offered as incentives. Around 2010s, consumer goods firm Unilever designed green reward payment scheme to reward

its green competent employees who demonstrated green behaviour such as consuming organic foods, using reusable water containers, and consuming renewable energy (Unilever, 2020).

GRP emerged as a business practice due to the rise in sustainability concerns, and leans on traditional reward system which in itself adopts financial and non-financial rewards to motivate desirable behaviour from organizational workers (Jackson, 2011; Terera & Ngirande, 2014; Mabaso & Moloi, 2016). GRP differs from traditional reward system by focusing on sustainability; yet, they both tie rewards to performance, as well as focus on motivating desirable behaviour from organizational workers using financial or (and) non-financial rewards (Berrone et al., 2013; Ahmad, 2015; Afsar & Umrani, 2020). GRPs are broadly grouped into financial and non-financial rewards. The specific types include green bonuses which are financial rewards for employee green activities; green vouchers which are non-financial rewards for employee green activities; green recognition which is a non-financial reward; green training which is a non-financial reward; and green flexibility which is a non-financial reward that permits employees to create their work schedules (such as work from home) in sync with personal well-being and environmental benefits (such as less consumption of carbon emissions) (Jabbour, Santos & Nagano, 2010) Each type of reward payment has immense benefits to green competent employees. Green vouchers enable employees to purchase products and services which helps to save funds would be budgeted to purchase these items and reduce their carbon footprint. Green recognition acknowledges the green competence of employees which positively affects their psychological green climate and positive affect, thereby helping to enhance their EGC level (Kim et al., 2017; Yong et al., 2019). Green training improves the EGC level of organizational employees which does not only transcend to higher ESG of the firm, but also helps to enhance financial performance of the firm (Daily & Huang, 2001). Green flexibility helps employees to minimize their carbon footprint and also help these employees attain higher level of convenience at home which could translate to higher productivity (Mandip, 2012; Paillé, 2014).

Firms have different ways of designing green reward payments, which is hinged on several factors such as business objectives, industry type, organizational culture, industry regulation, cost considerations and resources (Daily, Bishop & Govindarajulu, 2009). For every green firm, green objectives are always predefined to determine to what extent it would promote sustainability. Yet, green objectives may vary across firms based on by industry type, market positioning, innovativeness, and corporate values (Ehnert, 2009). The green objectives for a manufacturing firm

usually aims at reducing carbon and greenhouse gas (GHG) emissions, while a technology based firm would usually set green objectives that gear towards relying on sustainable energy sources to power electronic equipment. Therefore, green reward payments to employees from manufacturing sector and employees from technology sector are expected to differ. Also, firms that aim to become the industry leader on green products adopt ambitious targets and green rewards to its employees, compared to green firms with less green product positioning who would offer moderate rewards to employees (Renwick, Redman & Maguire, 2013). Each green firm is faced with unique industry regulation. Therefore, each firm setups green objectives that align with industry standards, thereby setting up green rewards that could vary with a firm from another industrial regulation (Jabbour, 2011; Opatha & Arulrajah, 2014).). More so, each firm designs its green reward payments according to its resources and costs, which could differ by firms as each firm would ensure it has the funds to green reward its employees for green competent performance (Pinzone et al., 2016; Tang et al., 2018).

2.1.4 Review of Green Transformational Leadership

Green Transformational Leadership (GTL) is a green leadership style that adopts techniques and characteristics of the traditional transformational leadership style of charisma, inspirational motivation, intellectual stimulation, individual considerations, and leading by example (Du, Y., & Yan, 2022). The traditional transformational leadership style was formerly developed by James Downtown in 1973 but was popularized by James MacGregor Burns in 1978 as a leadership model that motivates organizational workers to more productive. Burns described transformational leaders as leaders who are visionary, charismatic, inspirational, intellectual stimulation, possess individual considerations about subordinates, and lead by example; and such leaders inspire subordinates to work towards helping to achieve organizational goals (Adnan & Mubarak, 2010). Shamir, Avolio and Popper (2001) categorize transformational leadership as the most effective leadership model because it elevates subordinates to a higher level of motivation and productivity under the leadership of a democratic and charismatic leadership. With the increase in concern for environmental sustainability, Chen and Chang (2012) conceptualized the term “green transformational leadership” drawing on environmental management and the theory of transformational leadership, while stating that GTL is an appropriate leadership model that can help achieve the green objectives of a firm via motivating employees to be green competent. The concept of GTL has been explored by other studies in the literature (such as Al-Ghazali et al. 2022;

Perez et al. 2023), with evidence that it moderates a positive relationship between ESG performance of a firm and EGC.

GTL draws from the theory of transformational leadership, yet both leadership styles are different. In particular, GTL centers on achieving the sustainability goals of a firm whereas traditional transformational leadership style centers on achieving socio-economic goals of a firm (Carless, Wearing & Mann, 2000; Bass & Riggio, 2006; Chen & Chang, 2013; Du, Y., & Yan, 2022). Invariably, recent studies in the literature makes provision for alternative green leadership models. These leadership types are green transactional leadership and green situational leadership. Green transactional leadership merges both theory of transactional leadership and sustainability management. Such type of leadership model is centered on organizational behaviour and behavioural psychology, and therefore create a framework for productive workplaces (Parry & Thomson, 2002; Cai, Khan, & Egorova, 2023). Under green transactional leadership, there is a give and take situation, where employees are rewarded for demonstrating green competence, while punishments are meted out for failing to be green competent (Saif et al., 2023; Cai, Khan, & Egorova, 2023). Therefore, it is transactional. However, green situational leadership combines environmental management and theory of situational leadership. A green situational leader adapts to situations, events, or work environment in order to help subordinates gain green competence towards meeting the green objectives of the firm (Chen et al., 2017). However, GTL enjoys some advantages over other green leadership styles. This owes to distinct characteristics of GTL which makes it possible to provide adequate motivation that helps organizational employees to achieve green competence towards promoting ESG performance. These characteristics include green charisma, green inspirational motivation, green intellectual stimulation, green individual considerations, and green leadership by example (Du, Y., & Yan, 2022). GTL offers motivation to organizational employees towards achieving green objectives and goals of the firm. GTL also provides organizational employees with the visionary leadership to adopt green attitude and behaviour (Lavoie-Tremblay et al., 2016; Du, Y., & Yan, 2022; Jaiswal & Kant, 2018). Unlike other leadership model, green-based transformational leaders inspire subordinates to achieve higher levels of green performance than they would, helping to strengthen these subordinates green competence (Jaiswal & Kant, 2018).

Green Transformational Leadership (GTL) is a robust and innovative style of leadership that focuses on the incorporation of environmental and sustainability practices into the strategic vision and daily operations of a firm (Bennett, N., & Lemoine, 2014). Recent events show that

Principles of Green Technologies and Leadership (GTL) are not confined to any single industry but can be adapted and applied across diverse sectors, from manufacturing to service industries. Trends in green leadership are characterized by a shift towards a more sustainable and responsible business ethos. Leaders are increasingly recognizing the importance of environmental stewardship and are incorporating green practices into their business models (Harper & Shiver, 2015). This includes the adoption of renewable energy sources, waste reduction strategies, and sustainable supply chain management. The focus is on creating value not just for shareholders, but for all stakeholders, including employees, customers, and the community at large (Jackson et al., 2011). One notable example of successful GTL implementation is the global technology company, Siemens. Siemens has made significant strides in reducing its carbon footprint by investing in energy-efficient technologies and renewable energy. The company has set ambitious targets to become carbon neutral by 2030 and is well on its way to achieving this goal through its innovative GTL strategies. Another example is Patagonia, the outdoor clothing brand, which has long been a pioneer in GTL. Patagonia's commitment to environmental sustainability is evident in its product design, supply chain decisions, and advocacy for environmental causes. The company's dedication to GTL principles has not only reduced its environmental impact but has also enhanced its brand reputation and customer loyalty (Green & Roberts, 2012).

Also, GTL strategies may involve optimizing production processes to minimize waste and reduce carbon emissions. This could include the adoption of renewable energy sources, such as solar or wind power, to power manufacturing facilities, as well as implementing lean manufacturing techniques to streamline operations and eliminate inefficiencies (Green & Roberts, 2012). Similarly, in service industries such as hospitality or healthcare, GTL principles can drive innovation in areas such as resource management and waste reduction. For instance, hotels may invest in energy-efficient lighting and HVAC systems to reduce energy consumption, while hospitals may implement recycling programs to minimize the environmental impact of medical waste. By embracing GTL, organizations across industries can not only mitigate their environmental footprint but also gain a competitive edge by demonstrating their commitment to sustainability to customers, investors, and other stakeholders. GTL principles are applicable across

a wide range of industries, from manufacturing to service industries. In manufacturing, GTL can lead to more efficient production processes and reduced waste (Johnson & Huang, 2020). In the service industry, GTL can manifest in sustainable office practices and green procurement policies. Each industry faces unique challenges, but the principles of GTL remain the same: to minimize environmental impact while maximizing business value (Kim & Park, 2023). Yet, the effective functioning of GTL depends on training and development programs, which are crucial for equipping leaders and employees with the skills and knowledge needed to implement GTL effectively (Patel & Gomez, 2019). These programs can provide practical tools and techniques for sustainability, as well as inspire a culture of continuous improvement and innovation. By investing in training and development, organizations can ensure that their leaders are prepared to lead the charge in the transition to a more sustainable future (Rodriguez & Martinez, 2021).

Despite the clear benefits of GTL, there are several challenges and barriers to its widespread adoption. One of the main challenges is the perceived cost of implementing sustainable practices. Many organizations fear that the initial investment in green technologies and processes will be prohibitive (Smith & Lee, 2021). However, case studies have shown that the long-term savings and benefits often outweigh the initial costs. Another barrier is resistance to change within organizations. Changing long-standing practices and behaviors can be difficult, and there is often inertia to maintain the status quo. Leaders must be able to articulate a clear vision for sustainability and motivate their teams to embrace new ways of working (Chang & Williamson, 2022). Leaders often face resistance from stakeholders who may be hesitant to embrace change due to concerns about cost-effectiveness or disruption to established workflows. Additionally, navigating complex regulatory frameworks and ensuring compliance with environmental standards can pose significant obstacles (Jackson et al., 2011). However, there are strategies available to overcome these challenges. Ideally, leaders can emphasize the long-term benefits of GTL, including cost savings through energy efficiency and enhanced corporate reputation. By framing sustainability as a strategic imperative rather than a burdensome obligation, leaders can garner greater support from stakeholders. Collaboration with government agencies, industry associations, and other partners can also provide valuable resources and expertise to guide the implementation process. Moreover, investing in employee education and training programs can help foster a culture of sustainability within the organization, empowering staff to champion green initiatives and drive meaningful change (Cai, Khan, & Egorova, 2023).

Training and development programs play a crucial role in cultivating green leadership skills among organizational leaders and employees. In today's rapidly evolving business landscape, where environmental concerns are increasingly prominent, it is essential for leaders to possess the knowledge and expertise required to navigate complex sustainability challenges (Du, Y., & Yan, 2022). By investing in training programs focused on green leadership, organizations can empower their leaders to drive meaningful change and spearhead sustainability initiatives within their respective teams and departments (Cai, Khan, & Egorova, 2023). Furthermore, training programs can help employees at all levels of the organization develop a deeper understanding of environmental issues and learn practical strategies for incorporating sustainable practices into their daily work routines (Jaiswal & Kant, 2018). This not only enhances employee engagement and morale but also fosters a culture of innovation and continuous improvement. By equipping their workforce with the necessary skills and knowledge, organizations can position themselves as leaders in sustainability and make a positive impact on the planet for future generations (Lavoie-Tremblay et al., 2016).

2.2 Stylized Factors on ESG

Data shows that ESG adoption and practice has been on the increase since its conception. Its origin can be traced to Europe who are earliest adopters of ESG principles. In particular, the European Union has been a key driver of ESG practice in Europe, especially with the introduction of the Directive on Non-Financial Reporting in 2014 (European Commission, 2014). Thus required large companies to disclose non-financial and diversity information, thereby accelerating the adoption of ESG across the continent. In France, ESG is a corporate cultural practice, as the Grenelle II Act of 2010 mandates listed companies to report on their social and environmental impact. This legislation has created a culture of transparency and accountability. Several French firms like Danone and BNP Paribas are often cited as leaders in ESG practices, thereby serving as benchmarks if ESG practitioners (BNP Paribas, 2023). Germany's commitment to ESG is deeply rooted in its industrial base and environmental consciousness. The German Sustainability Code, established in 2011, provides a framework for companies to report on their sustainability performance. Corporations such as Siemens and BASF have embraced these principles, thereby focusing on energy efficiency, social responsibility, and sound governance. (German Council for Sustainable Development, 2011). The Nordic countries such as Norway, Denmark, and Sweden have a long-standing position on ESG. For instance, the Swedish government has set ambitious targets for

reducing greenhouse gas emissions, which has significantly influenced corporate behavior (Swedish Government, 2021). Firms like IKEA and Novo Nordisk are renowned for their commitment to ESG, heavily investing in renewable energy and social initiatives (Danone, 2021).

In Africa, the landscape of ESG is determined by diverse socio-economic challenges and environmental concerns. South Africa stands out over other African countries in terms of ESG, as its King Reports on Corporate Governance which was introduced in 2009, has been instrumental in promoting transparency and ethical practices (Securities and Exchange Commission, 2019) The King Report III emphasizes integrated reporting that combines financial and sustainability performance (Standard Bank Group, 2021). This has influenced a wide array of companies, including Standard Bank and Naspers, which focus on social equity and environmental sustainability. Nigeria has also made strides in ESG, particularly through its Securities and Exchange Commission's Sustainable Finance Initiative launched in 2019 (Safaricom Limited, 2021). This initiative has promoted ESG disclosures among listed companies, with firms like Access Bank leading the way in sustainable banking practices (Access Bank, 2021). Kenya's ESG approach is highlighted by the Nairobi Securities Exchange's advocacy for ESG reporting and the Kenya Green Bond Programme initiated in 2017 (Nairobi Securities Exchange, 2017). This program aims to raise capital for climate-resilient infrastructure projects. Safaricom, a major telecommunications company, has integrated ESG into its operations, emphasizing environmental sustainability and community development (Institute of Directors Southern Africa, 2009).

Asia has witnessed a rapid increase in ESG adoption, driven by industrial growth and heightened investor awareness. Japan has been a significant player, particularly since the Government Pension Investment Fund (GPIF), the world's largest pension fund, adopted ESG principles in 2017 (Government Pension Investment Fund, 2017). This move has set a powerful example for other institutional investors. Major Japanese companies like Toyota and Sony have adopted comprehensive ESG strategies, focusing on green technologies and corporate social responsibility. China's ESG journey has been marked by its emphasis on green finance (Infosys Limited, 2020). Since 2008, the China Securities Regulatory Commission has required listed companies to disclose environmental information (China Securities Regulatory Commission, 2008). The country's 14th Five-Year Plan underscores sustainable development, pushing companies towards more robust ESG practices. Leading firms such as Alibaba and Tencent have developed extensive ESG frameworks, focusing on environmental sustainability and social equity (Alibaba Group Holding

Limited, 2022). India's ESG landscape is evolving quickly. The Securities and Exchange Board of India mandated that top-listed companies report on ESG metrics through Business Responsibility Reports (Tata Group, 2022). Companies like Tata Group and Infosys are notable for their ESG initiatives, which include significant investments in social responsibility and environmental sustainability (Securities and Exchange Board of India, 2021).

North America has seen a marked increase in ESG awareness, largely driven by institutional investors and evolving regulations. In the United States, large institutional investors like BlackRock have emphasized the importance of sustainable investing, significantly influencing corporate practices (BlackRock, 2019). The U.S. Securities and Exchange Commission's proposed rules in 2021 to enhance climate-related disclosures have further spurred ESG adoption. Companies such as Microsoft and Apple have emerged as leaders in ESG, focusing on renewable energy, diversity, and strong governance structures (Microsoft Corporation, 2021). Canada has also been proactive in promoting ESG practices. The Toronto Stock Exchange has been encouraging ESG disclosures for several years (Toronto Stock Exchange, 2022). Prominent Canadian companies like Shopify and RBC have adopted extensive ESG strategies, investing heavily in environmental sustainability and community initiatives (U.S. Securities and Exchange Commission, 2021)

Several factors have contributed to the increasing popularity of ESG practice. Corporate governance is a major driver of ESG Popularity. Corporate scandals involving notable corporations such as Enrol have mandated the need for ethical practices in the corporate world. Likewise, environmental pollutions causes by high-profile firms (such as the BP Deepwater Horizon oil spillage and the Volkswagen emissions) are some of the leading activities that demand improvement in corporate governance practices, which promoted ESG Popularity. Corporations are increasingly recognizing ESG practices so as to promote their reputations, attract and retain their best employees, and create good relationship with customers who are increasingly becoming sympathetic to sustainability. For instance, Unilever's Sustainable Living Plan is a business growth and innovative model that illustrates how incorporating ESG principles can lead to measurable business growth. Also, outdoor apparel firm, Patagonia has integrated ESG into its business midek whereby 1% of sales is donated to environmental global activities aimed at creating awareness and reducing environmental pollution. Also Patagonia engages in recycling of materials to reduce waste which has improved the efficiency and enhanced ESG rating that attracts goodwill. Likewise,

Salesforce, leading customer relationship management firm, has incorporated ESG in its business strategy, as focus has shifted towards the reduction of carbon emissions. These case studies demonstrate the role played by corporate governance towards promotion the popularity and practice of ESG, as corporate board members are now more inclined towards adopting business models that align with ESG principles.

2.3 Theoretical Framework

Several theories have been developed in the literature to illustrate the importance of ESG. One of the theories prominently used in the literature is the stakeholders theory which was first conceived by Ian Mitroff in 1983 when he published his book "*Stakeholders of the Organizational Mind*", but was further strongly developed by Edward Freeman, whose 1983 book "*Strategic Management: A Stakeholder Approach*" recognized various groups of stakeholders to a firm whose activities influence performance of the firm. As such, Edward Freeman recommends that a firm should always recognize the needs of these various stakeholders in order to achieve and sustain performance. (Baumfield, 2016). On this premise, the theory of stakeholder was formed which emphasizes the importance of various stakeholders asides the business owners otherwise known as shareholders (Miles, 2012). Therefore the stakeholders of a firm compromise the shareholders, employees, suppliers, customers, trade associations, governmental institutions, communities and societies wherein the firm operates, the environment, and trade unions. These groups exert some influence on a firm's performance (Phillips, 2003). Shareholders provide the capital foe business and offer checks and balances against the managers, employees offer their skills and time to aid productivity, suppliers are important in the supply chain of a firm, trade associations and unions can disrupt business performance through industrial actions, customers consume the firm's product or service whose absence would bring an end to the firm, the environment is the source of raw material extraction, and government institutions create regulations that affect a firm's performance. Thus, the stakeholders theory encourages that each of these groups of stakeholders should be adequately recognized. This suggests that a firm should not only be focused on meeting the needs of the shareholders alone. Therefore, employees deserve adequate compensation, shareholders deserve optimal profit, the environment should be sustained, and society/community should be compensated for loss caused by the firm's location and operations (Laplume, Karan & Reginald, 2008). In his book, Freeman recommends that a firm must demonstrate responsible behaviour to various stakeholders, as lack of adequate attention by the firm could cause negative impact on

financial performance thereby constraining the ability to maximize shareholders wealth (McCray, 2015). Implicit on these arguments, firms must recognize environmental needs which demand ensuring clean air, stability of the climate and biodiversity, and clean water. Failure to promote environmental sustainability would spiral into adverse outcomes as environmental pollution is detrimental to human health and is unsuitable for agricultural purpose (Whelan et al., 2021; Xu et al., 2022).

Likewise, the concept of ESG can b explained using the resource based theory. The theory is the most popular theoretical perspectives for explaining the benefits of ESG. Also, known as the resource advantage theory, the resource based theory was developed by Jay Barney in 1991 as a theoretical perspective to explain how firms can utilize its resources to achieve competitive advantage (Achuora, 2018). The theory opines that businesses and firms should employ their assets to gain competitiveness (Boso, Afrane & Inkoom, 2017; Pradhan, 2018). However, the principle of this theory has been extended to explain the need for organizations to engage in green supply chain management initiatives because it promotes possesses multiplier effects that improve the environment and in turn helps firms to achieve competitive advantage that translate to improve performance metrics (Hart & Dowel, 2010). Lai, Cheng and Tang (2010) identified three components of greening (greening in procurement, manufacturing, and distribution) as some relevant strategic resources of a firm that can be employed to attain competitive advantage. Using the resource-based theory, Sarkis (2009) recognized the green initiative as a resource tool that can be used to improve the reputation and performance of a firm. Allen and Craig (2016) enthused that businesses engage in environmental sustainability spending because it helps them to gain competitive advantage.

Also, this study relies on motivation theories to explain how green reward payments and green transformational leadership moderate the relationship between employee green competence and ESG performance of a firm. Two motivational theories are used which are the two-factor theory by Frederick Herzberg and Vroom's expectancy theory. The two-factor theory (also known as Herzberg's motivation-hygiene theory and dual-factor theory) states that there are certain factors in the workplace that cause job satisfaction, while another set of factors engender dissatisfaction. It was established by psychologist Frederick Herzberg, who theorized that job satisfaction and job dissatisfaction act independently of each other (Sorenson, 2015). According to Herzberg, individuals are not content with the satisfaction of lower-order needs at work. These include those

needs related with least salary levels or safe and pleasant working conditions. Rather, individuals look for the satisfaction of higher-level mental needs that relate to achievement, recognition, responsibility, and the essence of the work itself (Wallgren, 2013). This appears to parallel Maslow's theory of a need hierarchy. However, Herzberg added a new dimension to this theory by proposing a two-factor model of motivation, grounded on the notion that the presence of one set of job characteristics or inducements leads to worker satisfaction at work, while other set of job characteristics promote dissatisfaction at work (Wallgren, 2013). Thus, satisfaction and dissatisfaction are not on a continuum with one rising as the other decreases, but they are however independent occurrences (Schultz & Schultz, 2010).

Expectancy theory proposes an individual will behave or act in a certain way because they are motivated to select a particular behaviour over other behaviour as a result of what they expect the outcome of that selected behaviour will be. Hence, the motivation of the behaviour selection is determined by the desirability of the outcome. An employee's performance is based on individual factors such as personality, skill, knowledge, experience and abilities (Kreitner & Kinicki, 2001). When selecting a particular behaviour, two things are considered; "effort to performance" and "performance to outcome". Effort to performance simply means that motivation is a product of the individual's expectancy that a certain effort will lead to the intended performance while performance to outcome means that motivation is influenced by the employees perceived changes of getting various outcomes as a result of accomplishing his or her goal (Chiang & Jang, 2008). In other words, the theory is of the belief that employees can be motivate towards the achieving a goal if there is a positive correlation between effort and performance because the outcome of a favourable performance will result in a desirable reward (Baker-Eveleth & Stone, 2008). This theory consists of three concepts namely expectancy, instrumentality and valence. Expectancy is of the belief that one's effort will result in the attainment of desired performance (effort to performance). Employees generally have different expectations and self-confidence of what they are capable of doing, therefore organisations have to find out those factors that can motivate employees to deliver their best performance. Such factors include training, support from supervisors and so on. Instrumentality is perception to outcome. Instrumentality simply means that an employee will receive a reward if the performance expectation is met. It represents a person's belief that a particular outcome is contingent on accomplishing a specific level of outcome. (Kreitner & Kinicki, 2001). The reward may be increase in salary, promotion, recognition and so on. Organisations should therefore ensure that promises of reward are fulfilled in order to motivate

the employees to improve their performance. Valence refers to the value an employee places on the reward (outcome). Employees valence depends on their needs which can be extrinsic such as money, promotion, benefits and so on or intrinsic (Baker-Eveleth & Stone, 2008).

Based on the tenets of the Frederick Herzberg and Vroom's expectancy theory, one expects that absence of motivation induces dissatisfaction among employees, thereby creating an apathy in employees towards engaging in actions that help the organization to achieve its goals and objectives. Likewise, the absence of green rewards and an effective leadership such as green transformational leadership would demotivate employees from being green competent which may occur via lack of interest to acquire green knowledge, green skills, as well as absence od green values and psychological climate. This would adversely affect ESG performance of the organization.

2.4 Conceptual Framework

When employee green competence is available, a firm will achieve its ESG goals, which implies that EGC has a positive effect on the ESG performance of a firm. Yet, an employee is a psychological being whose motivations to engage in organizational activities can be affected. To ensure that an employee is consistently green competent, he/she must experience psychological green climate, have the right green values, and have positive affect. The Herzberg theory and Victor Vroom's motivational theories demonstrate how motivations influence the productivity of an employee. Herzberg categorized motivation as hygiene and true motivators. The absence of any type of motivation would create demotivation, which would bring about job dissatisfaction and may lower EGC of workers, further spiraling to low ESG performance at the firm. Likewise, Victor Vroom theory suggests that rewarding an employee job performance would increase satisfaction and raise the level of productivity. Therefore, motivating an employee will help to improve psychological green climate, green values of an employee, as well as the employee's positive affect, which are the support mechanisms required to consistently achieve strong ESG performance for the firm. In the light of this study, green reward payments and green transformational leadership can be used to strengthen an employee's green psychological climate, employee green values, and positive affect. GTL provides adequate motivation that helps organizational employees to achieve green competence towards promoting ESG performance. These characteristics include green charisma, green inspirational motivation, green intellectual stimulation, green individual

considerations, and green leadership by example (Du, Y., & Yan, 2022). GTL offers motivation to organizational employees towards achieving green objectives and goals of the firm. GTL also provides organizational employees with the visionary leadership to adopt green attitude and behaviour (Lavoie-Tremblay et al., 2016; Du, Y., & Yan, 2022; Jaiswal & Kant, 2018). Also, green reward payments motivate an employee. For instance, green vouchers enable employees to purchase products and services which helps to save funds would be budgeted to purchase these items and reduce their carbon footprint. Green recognition acknowledges the green competence of employees which positively affects their psychological green climate and positive affect, thereby helping to enhance their EGC level (Kim et al., 2017; Yong et al., 2019). Green training improves the EGC level of organizational employees which does not only transcend to higher ESG of the firm, but also helps to enhance financial performance of the firm (Daily & Huang, 2001). Green flexibility helps employees to minimize their carbon footprint and also help these employees attain higher level of convenience at home which could translate to higher productivity (Mandip, 2012; Paillé, 2014). Based on this foregoing, this study opines that green transformational leadership and green reward payments moderate a positive relationship between ESG performance of a firm and EGC.

2.5 Empirical Literature

There is proliferation in empirical literature on studies which investigated the relationships between EGC, ESG firm performance, GTL, and green reward payments. Empirical results show that green reward payments have positive relationship with EGC. Singh and Singh (2021) demonstrated this using three hundred and eighty-four SMEs in India. The study tested for reliability of the data, engaged confirmatory factor analysis (CFA) and structural equation modelling (SEM). Also, Chen et al. (2020) collected data from three hundred and eight organizational workers from Taiwan, while using moderation regression showed that green reward payments positively affect EGC in the workplace. Using three hundred and sixteen workers in China, Liu et al. (2020) found that presence of green rewards positively increased EGC. Ren et al. (2018) sampled a total of three hundred and twelve workers from manufacturing companies in Taiwan and found that green rewards are used to encourage EGC.

Another strand of empirical studies on GTL and EGC show that GTL positively correlates with EGC. The study by Ding et al. (2023) demonstrates this using 525 organizational workers and 98 supervisors from Chinese firms. The study made use of moderates structural equation modelling,

hierarchical regression analysis and correlation analysis, while data was collected using well structured questionnaire. Findings from the study showed that GTL promotes EGC in the workplace. The study recommends that organizations should adopt GTL to encourage EGC which is vital to helping the firm achieve its ESG targets. Similarly, Sidney et al. (2022) conducted an empirical analysis that assessed the impact of GTL on the green creativity of employees using one hundred and fifty employees in Congo. Data was primarily collected using questionnaire while the data was analyzed using Smart-PLS software which is used for estimating SEM models. Findings obtained from the study indicate that EGC level increases when a firm has GTL, therefore making it important that firms should employ green transformational leaders to achieve yearly ESG objectives. Also, Singh and Singh (2023) examined GTL impact on EGC using 300 hotel workers in India. Reliability analysis, factor analysis, and SEM estimation techniques were used to analyzed the data which was collected using semi structured interviews. Results showed that GTL positively impacts on EGC. The empirical results obtained by Li et al. (2019) showed that green transformational leaders promoted green competence among three hundred and twelve workers in China. The data was collected using questionnaire while it was analyzed using multiple level regression. Also in China, Ren et al. (2019) investigated if GTL affects EGC of three hundred and sixteen Chinese workers. Survey research design was used to collect the data. Results from the data analyzed suggest that an employee becomes more green competent if led by a green transformational leadership. Covering Taiwan manufacturing sector, Chen et al. (2018) assessed the impact of GTL on the green creativity of three hundred and four employees who were selected from fifty one manufacturing firms in the country. Regression analysis was used to analyse the data, and results show that GTL enhances EGC. These results are consistent with findings from Jabbour et al. (2017), Wang et al. (2019); Ding et al. (2023) who found that GTL helps employees to learn green competence while also encouraging the level of green competence in the workplace. The study by Jabbour et al. (2017) relied on SEM, mediating regression analysis, and moderating regression analysis, while focusing on three hundred and sixteen manufacturing workers in Brazil. Wang et al. (2019) relied on data obtained from three hundred and twenty-seven workers in China's service companies, and data was analyzed using multiple regression. Li et al. (2020) used three hundred and twelve Chinese manufacturing workers in China, and used multiple regression analysis to estimate the dataset collected using questionnaire. The study by Ding et al (2023) used five hundred and twenty-five company workers in China, and used multiple moderation and mediation regression techniques.

Also, studies in the literature provide insights on how GTL moderates the relationship between ESG and EGC. Ding et al. (2023) evaluated whether GTL moderates the association between EGC and ESG firm performance. Using 525 employees in China, the study employed hierarchical regression and SEM which found that GTL is responsible for a positive relationship between EGC and ESG performance of businesses. Also, Sidney et al. (2022) analyzed the moderating effects of GTL on how EGC affects ESG of businesses in Congo. Using one hundred and fifty employees who work in electronic firms, the study collected data which was collected using questionnaire. The data was analyzed using SEM analysis, and results found that GTL moderates a positive relationship between ESG and EGC. Therefore, green transformational leaders help employees to achieve green competence to promote the ESG performance of the firm. Li et al (2020) also investigated the moderating influence of ETL on EGC and ESG using three hundred and twelve workers across Chinese manufacturing firms. Using SEM analysis, the study found that green transformational leaders helped employees investigated to achieve green competence which led to higher ESG performance of the firm. Ren et al (2019) and Wang et al. (2019) obtained similar results which emphasizes the importance of green transformational leadership towards helping organizational employees achieve green competence towards contributing to the ESG goals of the firm.

Likewise, empirical results from literature shows that green reward payments moderate the relationship between ESG and EGC. Chen et al. (2023) evaluated whether green reward payments moderate the association between EGC and ESG firm performance. Using three hundred and eight employees in Taiwan, the study employed SEM which found that green reward payments moderate a positive relationship between ESG and EGC. Also, Liu et al. (2022) analyzed the moderating effects of green reward payments on how EGC affects ESG of businesses in China. Using three hundred and sixteen workers, the study showed that green reward payments moderate positive relationship between ESG and EGC. Therefore, green reward payments motivate employees to achieve green competence to promote the ESG performance of the firm. Wang et al. (2019) also investigated the moderating influence of green reward payments on EGC and ESG using three hundred and four workers across Chinese manufacturing firms. Using hierarchical regression analysis, the study found that green reward payments help employees to achieve green competence which led to higher ESG performance of the firm. Ren et al (2019) and Jabbour et al. (2017) also obtained similar results which emphasizes the importance of green reward payments towards

motivating organizational employees achieve green competence towards contributing to the ESG goals of the firm.

CHAPTER 3: METHODOLOGY

3.1 Research Philosophy

Research methodology is defined as a framework that provides basis to analyze the research questions of a research study. There are three main types of methodology which are quantitative methodology, qualitative methodology, and mixed methodology. This study adopts a quantitative methodology, which involves the use of count data. However the data would be primarily sources using well structured questionnaire. The survey research design is used to answer the three research questions of this study. This research design involves the following steps: defining population of study, determination of sample size, discussion of sampling technique, discussion of instrument of data collection, and method of data analysis.

3.2 Research Philosophy

This research methodology is based on philosophical approaches that underline how its data is collected and analyzed. Saunders, Lewis and Thornhill (2009, p.119), Guba and Lincoln (2005), and Hallebone and Priest (2009) identify four research philosophy in the social sciences. These are ontology, epistemology, axiology, and research methodology. The type of research philosophy adopted in a research influences the pattern in which the study will be conducted. Three distinct ontological positions identified are realism, idealism and materialism (Snape & Spencer 2003). Realism claims that there is an external reality independent of what people may think or understand it to be, whereas, idealism maintains that reality can only be understood via the human mind and socially constructed meanings. Likewise, materialism notes that there is a real world but it is only the material or physical world that is considered to be real. Other phenomena, for instance, beliefs, values or experiences arise from the material world but do not shape it. This study seeks to understand, through ‘materialism’, how green transformational leadership and green reward payments moderate the relationship between employee green competence and ESG performance. In research parlance, epistemology is concerned with how a researcher acquires knowledge about a social phenomenon. There are two main perspectives for acquiring knowing, which are positivism and interpretivism. Positivism is based on the assumption that knowledge can be obtained by collecting scientific quantitative means; while interpretivism assumes that knowledge can only be acquired via human-based qualitative means (Saunders, Lewis & Thornhill, 2009). This study

adopts a positivist approach, as it relies on statistical measurable methods to produce validity and objectivity towards the research.

3.3 Research Design

Research design is the framework put in place to provide answers to a research study's questions (Creswell & Creswell, 2018; Trochim & Donnelly, 2020). It specifies what type of data is suitable for a research study, how the data is collected, and how the data will be analyzed towards producing insights to a phenomenon investigated (Maxwell, 2013; Yin, 2018). Research design is essential in conducting an empirical investigation into a subject matter. Therefore, it is imperative that a research design is appropriately designed so as to produce non-spurious insights to a phenomenon analyzed (Shadish, Cook & Campbell, 2002). There are several types of research designs that exist in the literature. They include correlational research design, descriptive research design, quasi-experimental research design experimental research design, and survey research design. Descriptive research design is a type of researcher designs that is used to explain or describe a phenomenon investigated without manipulating its related constricts or variables. It is employed in the natural sciences for studying a subject matter in its natural state; thus it is void of causation and does not examine relationships among variables (Wampold, B. E., & Serlin, R. C. (2000). Correlation research design is a direct opposite to the descriptive research design, wherein there is data manipulation to understand isolated relationships among variables of an investigated phenomenon (Maxwell, 2013; Yin, 2018). Experimental research design manipulates data to understand isolated relationships between variables of an underlying issue investigated (Campbell & Stanley, 1963). However, in the context of experimental research design, the data manipulation involves intentional control of independent variables to identify their impacts or effects on a dependent variable (Cook & Campbell, 1979; Trochim & Donnelly, 2020). The quasi-experimental research design has partial features of the experimental research design where in data is intentionally controlled by adjusting values of the independent variables to determine their different effects on the dependent variable (Shadish et al., 2002; Reichardt, 2009). Yet, unlike the experimental research design, the quasi-experimental research design does not involve random allocation of participants to groups (Reichardt, 2019). The survey research design is a research design that contains data through the use of well structured questionnaire, or interview. It is often deployed in management and social sciences to explain social and business phenomena (Kazdin, 2011). The data for a survey research design is determined using a sampling technique, which are always subjected to reliability and validity tests. Survey research design does not engage in data

manipulation; rather, the phenomena investigated are studied naturally. A survey research design can be adopted for cross-sectional or longitudinal studies (Dillman, Smyth & Christian, 2014). The cross-sectional survey research design involves studying a topic and collecting data from participants who are from different groups over different periods, while a long longitudinal survey research design involves studying a topic and collecting data from participants who are from different groups (Groves et al., 2009; Fowler, 2014). However, this study does not seek to control the independent variables; rather it analyzes the natural relationships between ESG firm performance, employee green competence, transformational leadership, and green reward payments; with the intention of collecting data using structured questionnaire. Therefore, the survey research design is suitable for this study.

3.4 Population of the Study

In research, the term "population" refers to a group of objects, persons, or elements " that is investigated (Saunders, Lewis & Thornhill, 2009). The population for this study focuses on Italy's ESG compliant firms. The nation of Italy is one of the strong adopters of the ESG framework, ranking top thirty in the last 5years (CRIF, 2023). Italy's ESG adoption can be traced to 1948 when its national constitution strongly recognized human and civic rights. This encouraged fair treatment of organizational employees and board members throughout the country. The situation further improved when an action plan on human and business rights was adopted in 2016 which ensured that business operations are aligned with environmental frameworks such as the Paris Agreement and the United Nations SDG. By 2023, the country adopted a national strategy and transition plan towards a circular economy which seeks to encourage use of efficient and renewable energy, the recycling of products, and minimal carbon use and emission. While being in the top 30 of ESG countries, Italy ranks lower than several European countries such as Norway, Switzerland, Denmark, Finland, Sweden, the UK, Germany, Belgium, and France. This suggests that Italian companies need to improve on their ESG performance. Yet, there are Italian firms with outlier ESG performance such as Enel and Ferrari which have one of the top ESG performances across other firms on the globe. Therefore, ESG in Italy is not an outright disappointment in Europe. Hence, there is room for ESG performance across poorly performing ESG firms in Italy. Across other countries outside the top 30 ESG firms, Italy's ESG performance is an example to the rest of the world. The population of Italian firms that have adopted ESG framework include: Enel, Intesa Sanpaolo, Generali, Ferrari, Prysmian, CNH Industrial, Leonardo, Amplifon, Snam, Terna, Brembo, Recordati, Moncler, Brunello Cucinelli, and Autogrill. This study seeks to empirically

analyse ESG in Italy to understand if ESG performance of its companies is associated with employee green competence, and if this association is moderated by any of green transformational leadership or green reward payments.

3.5 Sample and Sampling Technique

In research, it is impossible to know and use the true population for empirical data analysis. This owes to many constraints such as time to determine the population, resources to fully interview or administer questionnaires to the population, and unpredictability of the population. Hence, researchers settle for sample to enable them conduct analysis of data while inferring the results obtained from the sample to the entire population. However, it is very important that a sample chosen for a study represent all characteristics of its underlying population. For instance, it is important that the sampling is not selected in a manner that omits some characteristics of the population thereby causing selection bias. Also, sampling bias may occur when a researcher chooses the sample for a study based on convenience which also omits some aspect of the underlying population. More so, a sampling error may occur if the participants selected for a study do not respond to the questions of the survey. Differently, when the participants for a study provide inaccurate information, it leads to a form of sampling bias known as response bias. Therefore, it is very important in this study that all forms of bias are minimized so as to produce non-spurious results to explain the subject matter investigated. To minimize sampling error, it is imperative to ensure that the data are randomly collected. There are different ways to randomly collect samples for a study, which are simple random sampling, stratified random sampling, systematic random sampling, and cluster random sampling. In this study, the simple random sampling is chosen because it is inconsequential in this study if the perceived data is stratified, cluster, or systematic in nature. Some random sampling will collect data from multiple workers from ESG compliant firms in Italy. To determine the sample size, the following formula is employed:

$$N = \frac{Z^2 * P * (1 - P)}{e^2}$$

Where N is the required sample size; Z-score is the confidence level; P is estimation proportion which is a coefficient that assesses information level about the population; e is the margin error that is made about knowing the true population. Given that 90% confidence level (1.645 Z-score value) is chosen, and P is 0.5; while e is 0.04, the required sample size for this study is:

$N = 1.645^2 * 0.5 * (1 – 0.5) / 0.04^2 = 422.82$, which is approximated to 400. Therefore, the sample size is 400 persons who work in ESG compliant firms in Italy.

3.6 Strategy and Procedure of Data Collection

The data are collected using well structured questionnaire. The various managers ESG compliant firms are contacted via phone to discuss the purpose of the study, while asking for cooperation to distribute questionnaire to their employees. They were assured confidentiality of the data provided. Only five managers demonstrated willingness to help with the data collection. These are managers from Enel, Pirelli, Ferrari, Intesa Sanpaolo, and Prysmian Group. The questionnaire was designed using Google forms and a copy of the questionnaire was sent via an email to each of the three managers. The data will be collected after they have been administered and attended to. The results are transferred to Google sheet for analysis.

3.7 Research Instrument

The data for this study are collected using a well structured questionnaire. It is important that the instrument is consistent and actually measures the right constructs. Therefore, this study leans on standard scales which are already developed and used instruments by studies in the literature. Four constructs are measured in this study which are employee green competence (EGC), green transformational leadership (GTL), green reward payments (GRO), and ESG firm performance. The EGC scale is adopted from the EGC scales developed by Renwick, Redman and Maguire (2013) which is a sixteen set of questions on a 5point Likert scale that assess employee knowledge about the environment and knowledge about the organization and the environment; as well as ascertain if an employee possesses global sustainable attitudes, and sustainable workplace AMO (ability, motivation, and opportunity). The EGC scale by Renwick, Redman, And Maguire (2013) has been adopted by studies such as Amjad et al. (2021), Kuo et al. (2022), Liu and Li (2021), Morgan and Jabbour (2020), and Nadeem et al. (2020). Also, the questions on GTL is based Renwick, Redman and Maguire (2016). This scale originally draws from the four dimensions of traditional transformational leadership by Bass (1985) which are inspirational motivation, intellectual stimulation, individual considerations, and consideration for individual uniqueness. However, Renwick, Redman and Maguire (2016) adjusted these four dimensions to incorporate sustainable to create sixteen questions, while measuring on a 5point Likert scale to create a GTL

scales that measures green inspirational motivation, green intellectual stimulation, green individual considerations, green consideration for individual uniqueness. Chen and Wu (2022); Wang et al. (2023); Hameed, Khan and Khan (2021); and Du and Yan (2022) have all employed the GTL scale by Renwick, Redman and Maguire (2016) and found it be an exhaustive measurement for assessing the influence of GTL. Also, the scale for GRP is based on the six questions designed by Renwick et al (2013) which is measured on a 5point Likert scale and probes if employees earn green rewards for their EGC. It has been used by Amiad et al. (2021); Pallie at al. (2014); Nadeem et al. (2020); and Sachdeva and Singh (2023) to measure green reward payments in green firms. Lastly, the ESG scale used in this study is the DFGE ESG-Questionnaire which is a set of 26questions measured on a 5point Likert scale to help firms self-assess the level of their ESG performance. It has been employed by Brem, A., & Viardot, E. (2024); Chen, Y., & Paille, P. (2023); Kuo et al. (2022); and Wang et al. (2023) to assess ESG performance of businesses. Based on the foregoing, all constructs of ESG, EGC, GTL, and GRP are measured using standardized scales. Four demography questions are included to the overall questionnaire which are questions on gender, age group, management level, and education. A copy of the questionnaire will be attached to the email which will be forwarded to all ESG complaint firms in Italy. A copy of the questionnaire is attached at the appendix.

3.8 Reliability and Validity of Research Instrument

The research instrument is tested to ascertain if the constructs exhibit reliability and validity. The term reliability refers to the ability of measures constructs to generate consistent and stable results. In other words, it refers to the capacity to generate same results if the constructs are repeated. Reliability is essential for a survey research design to ascertain that the variables are not affected by measurement error, sampling error, response bias, and random variances. To ensure that the dataset collected are reliable, this study makes use of Cronbach technique which was developed by American psychologist Joseph Lee Cronbach in 1951 as took for assessing the internal consistency of various measures of a construct (Zikmund & Carr, 2013). Its values range from 0 to 1, where values of at least 0.7 indicate presence of internal consistency among measures of the construct (Briggs & Check, 1986). Yet, the Cronbach statistic suffers the shortcoming of assuming equal coefficient of items. If this assumption fails to hold, it could create underestimation or overestimation of reliability results, thereby leading to spurious research findings (Peterson & Kim, 2013). In such situation, the composite reliability coefficient becomes desired for testing reliability

among measures of the construct. The composite reliability coefficient was formally developed by Fornell and Larcker in 1981 as an improvement to the Cronbach statistic, while ignoring the assumption of equal item coefficients. Yet, they both share similarities of having range values from 0 to 1, where values from 0.7 indicate presence of internal consistency of items (Raykov, 1998). Both measures of reliability tests are employed in this study to extensively assess the reliability of the items. Also, it is important to conduct validity test as whether measures of a construct measure what they are expected to measure. Correlation matrix will be used to assess the validity status of this study. Conducting correlation matrix as test for validity expects that there is convergent validity; that is the items in the questionnaire are correlates. Also, correlation matrix test for validity expects discriminant validity; that is the correlation between items in the questionnaire should be low. These imply that the items should exhibit low correlations, otherwise high correlation implies that all items are nearly the same and renders them invalid. The threshold correlation coefficient is 0.8; values low than this threshold indicates that the items are valid. If the coefficients are higher than 0.8, it implies presence of multi-collinearity. Hence, one of the items should be replaced with a low correlating item (Berry & Feldman, 1985).

3.9 Pre-Diagnostic Tests

This study conducts Pre-Diagnostic test to improve the validity and reliability of the data collected for analysis. These tests are missing value, response rate test, non-response rate test, outlier test and normality test. Missing value test is employed to determine and address presence of missing values in the data collected. Presence of missing values, caused by when respondents do not provide answers for some personal reasons reduce the representation of the entire sample of a study thereby creating bias data results for empirical analysis (Xu, Liu & Kang, 2020; Lin & Tsai, 2020). The missing values in the dataset will be deleted thereby creating reduction in the sample size of this study (Kaur & Dahiya, 2013). To minimize the presence of missing values, the questionnaire will be easily worded to minimize missing values. The response rate test checks to ascertain the percentage of individuals who complete all questions contained in the questionnaire. This test will be done manually to determine participants who do not complete their survey. A high response rate is required to ensure strong representative of the participants to the true population (Keeter et al., 2006; Groves & Peytcheva, 2008; Peytchev, 2013). Therefore, this study will appeal to ESG compliant firms of this study to help persuade employees to fully complete the questions contained in the questionnaire. Non response test seeks to analyze if the appropriate persons attended to the survey, as the participation of unwarranted participants in a survey would create bias results (Little

& Vartivarian, 2005). Non-response test is conducted manually (Raghunathan et al., 2001; Schouten, B., Cobben & Bethlehem, 2009). This study minimizes non-response rate by encouraging the managers to ensure that the desired respondents participate in the survey. Also, outlier test checks to determine extremely high values whose presence can distort statistical inference (Barnett & Lewis, 1994). This test will be conducted using the Mahalanobis distance test. Detected outlier values will be deleted (Rousseeuw & Leroy, 1987; Filzmoser, Maronna & Werner, 2008). Lastly, this study conducts normality test of the dataset to determine if parametric or non-parametric statistics should be used for inferential statistics. The test will be conducted using Shapiro-Wilk statistic. If the data are normally distributed, this study will apply parametric statistics, otherwise non-parametric statistics will be deployed (D'Agostino, Belanger & D'Agostino, 1990; Thode, 2002; Razali & Wah, 2011).

3.10 Method of Data Analysis

This study relies on structural equation modelling (SEM) to estimate the data for this study and provide answers to the study's research questions, based from the analyses obtained. It is a statistical technique used to analyze relationships between latent and observed variables. This is one major benefit of the SEM technique, which enables latent variables and empirically analyze existence of relationships between each other, or with observed variables. Yet, there are variants of SEM which includes confirmatory factor analysis (CFA), path analysis, fully structural equation model (FSEM), and partial least squares, structural equation modeling (PLS-SEM). The CFA variant of factor analysis is used to analyze the first research question of the study towards determining if there is a relationship between EGC and ESG performance. CFA is a relevant SEM variant used for assessing relationships between latent variables and their observed variables. It is conveniently used for parametric and non-parametric data, and is used when there is no need to ascertain the moderation effects of a variable across two variables. The first research question only seeks to establish the relationship between EGC and ESG. Hence, the CFA is appropriate to test for such association. The second and third research questions border on moderation analysis. The PLS-SEM technique is used, which is a type of structural equation modeling which is used for analyzing relationships between latent and observed variables (Lohmoller, 1989). While the PLS-SEM is not the only SEM type, it is the most suitable for this study owing to its statistical properties. For instance, it is suitable for small sample size such as 400 which is used for this study. It is not restricted to normally distribution property of a dataset; hence can be used if the data is not normally

distributed or otherwise. It can also be used for moderated analysis which will be used to estimate the moderating effects of GTL and GRP on EGC and ESG firm performance. The path coefficients are generated to analyze the second and third research questions of this study.

CHAPTER 4: ANALYSIS AND PRESENTATION OF RESULTS

4.1 Demography Analysis

Table 4.1: Demographic Statistics

Variables	Categories	Frequency	Percentage	Cumulative %
Gender	Female	121	30.48	30.48
	Male	246	61.96	92.44
	Others	30	7.56	100
	Total	397	100	
Age	18-24 years	82	20.65	20.65
	25-29 years	72	18.14	38.79
	30-34 years	83	20.91	59.7
	35-39 years	75	18.89	78.59
	More than 40 years	85	21.41	100
	Total	397	100%	
Education	Bachelor Degree	246	61.96	61.96
	Diploma of secondary education	67	16.88	78.84
	Master Degree	25	6.30	85.14
	Other education	27	6.80	91.94
	PhD	32	8.06	100
	Total	397	100	
Managerial Level	Low Level Management	117	29.47	29.47
	Medium Level Management	135	34.01	63.48
	Top Level Management	145	36.52	100
	Total	397	100	

Source: Author's Computation from field survey

A total of four hundred questionnaires were sent to employees of Enel, Pirelli, Ferrari, Intesa Sanpaolo, and Prysmian Group via electronic media. Managers for these various firms helped to minimize nonresponse bias in the dataset collected by ensuring only those who are eligible for the questions attend to it. More so, the firm managers helped to reduce response bias by encouraging the workers time to provide accurate answers to the questions based on the importance of this study. At the end of the field survey, the data was collected and manually checked for missing values. It was observed that three of the collected dataset had missing values. As such, they were deleted from the entire dataset, thereby producing a total sample size at three hundred and ninety-seven. This shows that this study achieved 99.25% of its targeted research participants, which increases the validity and statistical significance of the research findings. The demographic data of the three hundred and ninety-seven respondents are presented in table 4.1. The table shows that majority of them are male with fewer number of female respondents. The table also shows that most of the

respondents are younger, who are less than 35years. Also, table 4.1 reveals that most of the respondents are Bachelor degree holders, and that many of them are too level managers.

4.2 Normality Analysis

Table 4.2: Normality Test on EGC Variables

Variable	p-value	t-value
EGC1	0.00	28.63
EGC2	0.00	28.10
EGC3	0.00	27.40
EGC4	0.00	27.76
EGC5	0.00	25.26
EGC6	0.00	25.98
EGC7	0.00	27.47
EGC8	0.00	26.36
EGC9	0.00	27.28
EGC10	0.00	28.95
EGC11	0.00	27.03
EGC12	0.00	23.48
EGC13	0.00	27.92
EGC14	0.00	25.43
EGC15	0.00	27.71
EGC16	0.00	27.34
EGC17	0.00	28.83
EGC18	0.00	25.07
EGC19	0.00	28.14
EGC20	0.00	25.94
EGC21	0.00	25.24
EGC22	0.00	29.29
EGC23	0.00	27.44
EGC24	0.00	26.59
EGC25	0.00	28.05
EGC26	0.00	28.20

Source: Author's Computation from field survey

Table 4.3: Normality Test on ESG Variables

Variable	p-value	t-value
ESG1	0.00	24.08
ESG2	0.00	28.11
ESG3	0.00	29.87
ESG4	0.00	28.06

ESG5	0.00	25.90
ESG6	0.00	25.30
ESG7	0.00	25.57
ESG8	0.00	27.18
ESG9	0.00	25.70
ESG10	0.00	23.94
ESG11	0.00	25.78
ESG12	0.00	26.30
ESG13	0.00	24.64
ESG14	0.00	25.13
ESG15	0.00	24.43
ESG16	0.00	26.64
ESG17	0.00	24.14
ESG18	0.00	29.75
ESG19	0.00	26.02
ESG20	0.00	26.33
ESG21	0.00	27.77
ESG22	0.00	27.79
ESG23	0.00	27.66
ESG24	0.00	26.60
ESG25	0.00	24.52
ESG26	0.00	29.09
ESG27	0.00	27.53
ESG28	0.00	25.27
ESG29	0.00	26.07
ESG30	0.00	27.11
ESG31	0.00	24.00
ESG32	0.00	26.73
ESG33	0.00	23.29
ESG34	0.00	24.65
ESG35	0.00	26.15
ESG36	0.00	25.27

Source: Author's Computation from field survey

Table 4.4: Normality Test on GTL Variables

Variable	**p-value**	**t-value**
GTL1	0.00	24.49
GTL2	0.00	27.50
GTL3	0.00	24.81
GTL4	0.00	26.88
GTL5	0.00	29.39
GTL6	0.00	25.24

GTL7	0.00	25.70
GTL8	0.00	25.93
GTL9	0.00	25.07
GTL10	0.00	25.93
GTL11	0.00	24.13
GTL12	0.00	28.27
GTL13	0.00	24.93
GTL14	0.00	25.90
GTL15	0.00	27.20
GTL16	0.00	25.03

Source: Author's Computation from field survey

Table 4.5: Normality Test on GRP Variables

Variable	**p-value**	**t-value**
GRP1	0.00	26.38
GRP2	0.00	28.63
GRP3	0.00	27.64
GRP4	0.00	27.52
GRP5	0.00	27.70
GRP6	0.00	27.06

Source: Author's Computation from field survey

Normality tests, a crucial step in data analysis, were rigorously conducted to ascertain the distribution characteristics of the datasets collected from the three hundred and ninety-seven participants. The Shapiro-Wilk statistic, a widely recognized method for assessing normality, was employed in this study to meticulously examine the distributional properties of the data. This statistical procedure allows researchers to make informed decisions regarding the appropriar of parametric statistical analyses, ensuring the robustness and reliability of subsequent inferential conclusions. By rigorously scrutinizing the normality assumption, researchers can confidently proceed with appropriate analytical techniques tailored to the specific characteristics of the data, thereby enhancing the validity and accuracy of the research findings. The rest results for all four constructs (EGC, ESG, GTL, and GRP) show that the data collected for this study are not normally distributed. Hence, nonparametric statistical techniques are suited to analyze the data for this study.

4.3 Reliability and Validity Analysis

Table 4.6: Cronbach Reliability Results

Variable	Alpha	Remark
EGC	0.92	Excellent
ESG	0.94	Excellent
GTL	0.88	Good
GRP	0.74	Acceptable

Source: Author's Computation from field survey

Table 4.7: Composite Reliability Results

Variable	Alpha.raw_alpha	Alpha.average_r
EGC	0.92	0.32
ESG	0.94	0.32
GTL	0.87	0.32
GRP	0.74	0.32

Source: Author's Computation from field survey

To ensure the robustness and reliability of the dataset under scrutiny, multiple validity and reliability assessments were meticulously conducted. The validity of the dataset was rigorously examined utilizing the Pearson correlation method, a widely utilized technique for establishing associations between variables. Detailed R codes for the correlation analysis are provided in the Appendix, facilitating transparency and reproducibility in the analysis process. The correlation coefficients, falling within the range of above 0.1 yet below 0.8, signify a moderate level of correlation among the variables included in the dataset. This finding suggests that while there are discernible associations among the variables, they are not overly interdependent, thereby affirming the dataset's suitability for subsequent analyse. Moreover, the dataset exhibited both convergent and discriminant validity, as outlined by Berry and Feldman (1985). This further validates the dataset's appropriateness for the intended research purposes, signifying its capability to accurately measure the constructs under investigation. Reliability assessments, conducted using both Cronbach's alpha statistics and composite reliability statistic, consistently demonstrated the dataset's reliability. These robust reliability metrics provide confidence in the stability and consistency of the dataset, affirming its suitability for rigorous analytical procedures and interpretation of research findings.

4.4 SEM Analysis

Table 4.8: Relationship between EGC and ESG

lhs	op	rhs	est	se	z	pvalue
EGC	~~	EGC	0.321	0.067	4.764	0.000**
ESG	~~	ESG	0.663	0.099	6.704	0.000**
EGC	~~	ESG	0.459	0.063	7.230	0.000**

Source: Author's Computation from field
Note: ** < .001

Table 4.9: Moderating effects of GTL on EGC and ESG

Variable	Coefficient	p-value
ESG_score	-1.35	0.477
EGC_score	-11.89	0.469
GTL_EGC_interaction	25.16	0.451

Source: Author's Computation from field survey
Note: ** < .001

Table 4.10: Moderating effects of GRP on EGC and ESG

Variable	**Coefficient**	p-value
GRP_score	-0.63	0.000**
EGC_score	5.00	0.000**
GRP_EGC_interaction	10.32	0.000**

Source: Author's Computation from field survey
Note: ** < .001

Table 4.8 provides a comprehensive summary of the results obtained from the Confirmatory Factor Analysis (CFA), elucidating the covariance between the latent variables under investigation. Notably, the analysis revealed a significant covariance of 0.459 ($p < 0.001$) between EGC and ESG, indicating a robust positive association between Green Competence (EGC) and Environmental, Social, and Governance (ESG) practices within the workplace. This suggests that heightened levels of Green Competence among employees correlate positively with the implementation and adherence to ESG principles within the organizational framework. Consequently, individuals proficient in green practices contribute positively to the enhancement of their organization's ESG performance, thereby fostering sustainable business growth and responsible corporate citizenship.

Furthermore, Tables 4.9 and 4.19 encapsulate the outcomes of Partial Least Squares Structural Equation Modeling (PLS-SEM) analyses, illustrating the moderating effects of Green Transformational Leadership (GTL) on the relationship between EGC and ESG, and Green Reward Pay (GRP) on the relationship between ESG and EGC, respectively. Table 4.9 reveals that while GTL theoretically moderates a positive association between EGC and ESG, the corresponding p-value fails to reach statistical significance. Consequently, the presence of green transformational leadership may not significantly amplify the positive contributions of green competent workers toward ESG performance. Therefore, GTL's moderating effect on the EGC-ESG relationship is inconclusive. In contrast, Table 4.10 underscores a notable finding, indicating a positive and statistically significant coefficient ($b = 10.32$, $p < .001$) for the GRO_EGC_interaction variable. This observation suggests that Green Reward Pay (GRP) effectively moderates the relationship between EGC and ESG, thereby augmenting the positive impact of green competent employees on the organization's ESG performance. Consequently, initiatives such as green reward programs serve as potent mechanisms for incentivizing and reinforcing environmentally responsible behaviors among employees, ultimately enhancing overall ESG performance and fostering sustainable business practices.

4.5 Discussion of Results

Results from the analyses show that EGC has strong positive and significant relationship with a firm's ESG performance. This underscores the importance of a green competent employee who helps to lower a firm's carbon footprint, which translates to cost reduction, competitive advantage, increase in reputation and goodwill, and higher consumer satisfaction (Afsar, Badir & Kiani, 2020). Consumers these days are becoming increasingly environmental conscious, and are concerned about how a firm's accountability and adherence to rules, and how it treats its internal and external stakeholders. Hence, firms with higher ESG scores (Friede, Busch & Bassen, 2015; Wang et al., 2023), as top ESG-performing firms are outperforming firms with lower ESG ratings (Whelan et al., 2021; Horan et al , 2022; Xu et al., 2022; Li & Zhang, 2022). The results from this study suggests that firms with lower ESG ratings can significantly improve on their ESG position by ensuring that their employees are green competent. This assertion is consistent with Kaur and Sharma (2015); Khan et al. (2017) who found that for a firm to achieve higher ESG scores, it requires that it's employees should be green competent. An employee who is green competent has the knowledge and skills about sustainability, and is energized, motivated, and resilient to contribute in organizational tasks that promote sustainability of the environment (Boiral, Talbot &

Paillé, 2015; Kim et al, 2017). A green competent employee has green values which are intrinsically held beliefs towards promoting sustainability. Hence, employee green competence (EGC) is a critical factor that determines whether the green objectives and goals of an organization will be achieved.

Further results obtained from the data analyzed show that GTL moderates a positive but insignificant association between EGC and ESG. This implies that transformational leadership do not significantly strengthen the positive contributions of green competent workers towards achieving higher ESG ratings at the workplace, though there is evidence from the data analyzed that green transformational leaders help to improve how green competent workers contribute positively to a firm's ESG ratings. Transformational leadership has been considered as the most effective leadership model because of its charismatic characteristic, ability to inspire motivation, intellectual stimulation, individual considerations, and ability to lead by example (Du, Y., & Yan, 2022). However, results from this study show that such leadership model does not have the wherewithal to significantly strengthen the positive contributions of green competent workers towards higher ESG ratings of a firm. This finding disagrees with Ding et al. (2023), Li et al (2020), and Sidney et al. (2022), and Wang et al. (2019) who found that GTL moderates a positive association between EGC and ESG in China and Congo. Therefore, while GTL may be a significant factor that strengthens the positive contributions of green competent workers towards ESG performance of a firm in other countries, GTL is not a significant factor that strengthens the positive contributions of green competent workers towards ESG performance of a firm in Italy.

The results from the data analysis reveal GRP moderates a positive significant relationship between EGC and ESG. This indicates that green reward pay significantly strengthens the positive contributions of green competent workers towards achieving higher ESG ratings at the workplace. This result agrees with Chen et al. (2023), Liu et al. (2022), Wang et al. (2019), Ren et al (2019), and Jabbour et al. (2017) who found that GRP moderates a positive association between EGC and ESG. This suggests that green based firms should never ignore the role of green reward pay as a relevant factor that improves how green competent workers contribute to higher ESG scores of the firm. Green reward payments incentivize sustainably responsible behaviour among organizational workers (Beck-Krala & Klimkiewicz, 2018). They started to be used as a means of motivating environmental behaviour in the workplace place during the 20th century. They have grown to serve as a medium to encourage sustainability among organizational workers.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study shows that EGC has strong positive and significant relationship with a firm's ESG performance. This underscores the importance of a green competent employee who helps to lower a firm's carbon footprint, which translates to cost reduction, competitive advantage, increase in reputation and goodwill, and higher consumer satisfaction (Afsar, Badir & Kiani, 2020). Consumers these days are becoming increasingly environmental conscious, and are concerned about how a firm's accountability and adherence to rules, and how it treats its internal and external stakeholders. Hence, firms with higher ESG scores (Friede, Busch & Bassen, 2015; Wang et al., 2023), as top ESG-performing firms are outperforming firms with lower ESG ratings (Whelan et al., 2021; Horan et al , 2022; Xu et al., 2022; Li & Zhang, 2022). The results from this study suggests that firms with lower ESG ratings can significantly improve on their ESG position by ensuring that their employees are green competent. This assertion is consistent with Kaur and Sharma (2015); Khan et al. (2017) who found that for a firm to achieve higher ESG scores, it requires that it's employees should be green competent. An employee who is green competent has the knowledge and skills about sustainability, and is energized, motivated, and resilient to contribute in organizational tasks that promote sustainability of the environment (Boiral, Talbot & Paillé, 2015; Kim et al, 2017). A green competent employee has green values which are intrinsically held beliefs towards promoting sustainability. Hence, employee green competence

(EGC) is a critical factor that determines whether the green objectives and goals of an organization will be achieved.

Further results obtained from the data analyzed show that GTL moderates a positive but insignificant association between EGC and ESG. This implies that transformational leadership do not significantly strengthen the positive contributions of green competent workers towards achieving higher ESG ratings at the workplace, though there is evidence from the data analyzed that green transformational leaders help to improve how green competent workers contribute positively to a firm's ESG ratings. Transformational leadership has been considered as the most effective leadership model because of its charismatic characteristic, ability to inspire motivation, intellectual stimulation, individual considerations, and ability to lead by example (Du, Y., & Yan, 2022). However, results from this study show that such leadership model does not have the wherewithal to significantly strengthen the positive contributions of green competent workers towards higher ESG ratings of a firm. This finding disagrees with Ding et al. (2023), Li et al (2020), and Sidney et al. (2022), and Wang et al. (2019) who found that GTL moderates a positive association between EGC and ESG in China and Congo. Therefore, while GTL may be a significant factor that strengthens the positive contributions of green competent workers towards ESG performance of a firm in other countries, GTL is not a significant factor that strengthens the positive contributions of green competent workers towards ESG performance of a firm in Italy.

The results from the data analysis reveal GRP moderates a positive significant relationship between EGC and ESG. This indicates that green reward pay significantly strengthens the positive contributions of green competent workers towards achieving higher ESG ratings at the workplace. This result agrees with Chen et al. (2023), Liu et al. (2022), Wang et al. (2019), Ren et al (2019), and Jabbour et al. (2017) who found that GRP moderates a positive association between EGC and ESG. This suggests that green based firms should never ignore the role of green reward pay as a relevant factor that improves how green competent workers contribute to higher ESG scores of the firm. Green reward payments incentivize sustainably responsible behaviour among organizational workers (Beck-Krala & Klimkiewicz, 2018). They started to be used as a means of motivating environmental behaviour in the workplace place during the 20th century. They have grown to serve as a medium to encourage sustainability among organizational workers.

5.2 Conclusion

In conclusion, this study underscores the pivotal role of Employee Green Competence (EGC) in fostering a firm's Environmental, Social, and Governance (ESG) performance. The findings highlight a robust and positive relationship between EGC and ESG performance metrics, emphasizing the significance of having environmentally knowledgeable and skilled employees within organizations. These green competent individuals contribute not only to reducing carbon footprints but also to cost reduction, competitive advantage, enhanced reputation, and increased consumer satisfaction, aligning with the evolving environmental consciousness among modern consumers. Furthermore, the results indicate that firms with lower ESG ratings can substantially enhance their ESG position by prioritizing the development and cultivation of green competent employees. This assertion is consistent with prior research, which emphasizes the integral role of employee green competence in achieving higher ESG scores. Green competent employees, characterized by their intrinsic commitment to sustainability, possess the necessary knowledge, skills, and values to drive organizational sustainability initiatives forward. Moreover, while Green Transformational Leadership (GTL) exhibited a positive but statistically insignificant moderation effect on the relationship between EGC and ESG, Green Reward Pay (GRP) emerged as a significant moderator. The findings suggest that incentivizing environmentally responsible behavior through GRP effectively strengthens the positive contributions of green competent workers toward achieving higher ESG ratings. This underscores the importance of incorporating green reward mechanisms as a means to motivate sustainable practices among organizational workers, echoing previous research highlighting the efficacy of such initiatives in promoting environmentally responsible behavior. As such, this study recognizes the critical role of EGC as a determinant of organizational ESG performance and emphasizes the importance of integrating green reward mechanisms to reinforce sustainable behavior among employees. These findings provide valuable insights for organizations seeking to enhance their ESG performance and underscore the need for continued research into the dynamics of employee green competence and its impact on sustainable business practices.

5.3 Recommendations

Based on the foregoing, the following recommendations are adopted:

1. Green based firms and organizations must be committed to hiring green competent job seekers.

2. Green based firms and organizations must be committed to improving the green competence of their workers.
3. Green based firms and organizations must learn to employ green reward pay as a means to incentivize sustainably responsible behaviour among their workers.
4. Green based firms and organizations must adopt the best green leadership model so as to strengthen the positive contributions of green competent workers on their ESG performance.

5.4 Limitations of the Study

This study faces some constraints that limit its success. Time and funds resources pose some identified challenges. The study was carried out in a right academic session which makes it difficult to conduct the study. Yet, given the importance of the study to various stakeholders on ESG, the study ensures that sufficient time is provided to execute the research. Likewise, funds pose a threat to completing the job. This is overcome by budgeting sufficient funds for sourcing journals online, making necessary photocopies on relevant materials Asides the constraint posed by time and money, this study faced the difficult of measuring ESG, EGC, GTL, and GRP.Failure to adequately measure these constructs would lead to measurement error which would impair the reliability and validity of the data collected. To mitigate the aforementioned problem, this study ensured that the constructs were clearly measured using relevant literature, and avoiding the use of double-barreled or confusing questionnaire (see Creswell & Creswell, 2018; Trochim & Donnelly, 2020).

5.5 Future Research Direction

Future research endeavors could delve into exploring cultural variations to understand how different societal norms and values influence the relationship between employee green competence (EGC), leadership styles, and organizational Environmental, Social, and Governance (ESG) performance. Comparative studies across various countries or regions could shed light on how cultural contexts shape attitudes towards sustainability in the workplace. Additionally, longitudinal studies could be conducted to track the impact of EGC development initiatives and leadership interventions on organizational ESG performance over time. By examining trends and changes in ESG metrics alongside shifts in employee green competence and leadership practices, researchers can gain valuable insights into the sustainability outcomes of organizational interventions.

Further research could also investigate the mediating mechanisms through which EGC influences ESG performance. This could involve exploring factors such as employee engagement, organizational culture, or innovation processes to understand the underlying pathways through which green competence translates into tangible sustainability outcomes. Moreover, there is a need to compare the effectiveness of different leadership models, beyond transformational leadership, in leveraging employee green competence to enhance ESG performance. Exploring the roles of servant leadership, ethical leadership, or distributed leadership in fostering sustainable organizational practices could provide valuable insights into alternative approaches to sustainability leadership.

Integrating stakeholder perspectives into future research efforts could also be valuable. This entails incorporating the viewpoints of diverse stakeholders, including employees, customers, investors, and community members, to assess the impact of EGC and leadership on organizational ESG performance. Understanding how various stakeholders perceive and value sustainability efforts can provide a more comprehensive understanding of their effectiveness and implications. By exploring these avenues, future research can contribute to a deeper understanding of the dynamics between EGC, leadership, and organizational sustainability, ultimately informing strategies for fostering sustainable business practices.

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Appendix

Questionnaire

ASSESSING THE IMPACT OF EMPLOYEE GREEN COMPETENCE ON ESG PERFORMANCE: THE MODERATING EFFECT OF GREEN REWARD PAYMENTS AND GREEN TRANSFORMATIONAL LEADERSHIP

I am conducting an MBA research study titled “the impact of employee green competence on ESG performance, while assessing if green transformational leadership and green reward payments moderate this relationship. Your participation is essential, and your responses will be held in utmost confidentiality. Kindly take your time to participate in the survey, help to attend to all questions. Thanks for your participation.

Yours Faithfully,

[Insert name]

_____
Signature

Section A: Demographic Information

Please kindly indicate the category to which you belong by ticking the empty boxes:

1. Gender: Male [ ]; Female [ ]; Others _____

2. Age: 18-24 years [ ]; 25-29 years [ ]; 30-34 years [ ]; 35-39 years [ ]; More than 40 years [ ].

3. Education: Diploma of secondary education [ ]; Bachelor Degree [ ]; Master Degree [ ]; PhD [ ]; Others [ ]

4. Management Level: Top level management [ ]; Medium level management [ ]; Top level management [ ]; Others [ ]

Section B: Employee Green Competence Assessment

Tick (√) in the appropriate spaces provided below:

SD = Strongly Disagree; D = Disagree; U = Uncertain; A = Agree; SA = Strongly Agree

Question	SD	D	U	A	SA
I have a good understanding of the environmental issues facing my organization.					
I know what actions I can take to reduce the environmental impact of my work.					
I regularly update my knowledge of environmental issues and practices.					
I am aware of the environmental policies and goals of my organization.					
I have the skills and abilities to perform my work in an environmentally friendly way.					
I am motivated to improve the environmental performance of my organization.					
I have the opportunity to participate in environmental initiatives and decision making.					
I receive adequate support and resources to implement green practices at work.					
I am recognized and rewarded for my environmental efforts and achievements.					

I receive constructive feedback on my environmental performance.					
I am concerned about the current state of the natural environment.					
I believe that environmental problems have serious consequences for human well-being.					
I think that everyone should take responsibility for protecting the environment.					
I am willing to change my lifestyle to reduce my Environmental footprint.					
I support environmental organizations and causes.					
I prefer to buy products and services from Environmentally responsible companies.					
I avoid using products and services that harm the environment.					
I actively seek information about environmental issues and solutions.					
My organization is committed to environmental sustainability.					
My organization has a clear and consistent environmental vision and strategy.					
My organization communicates effectively about environmental issues and expectations.					
My organization integrates environmental considerations into its core business processes.					
My organization encourages innovation and creativity to enhance its environmental performance.					
My organization collaborates with external stakeholders to address environmental challenges.					
My organization monitors and evaluates its environmental performance and impact.					
My organization is a leader and role model in Environmental sustainability.					

Section C: ESG Firm Performance Assessment

Tick (√) in the appropriate spaces provided below:

SD = Strongly Disagree; D = Disagree; U = Uncertain; A = Agree; SA = Strongly Agree

Question	SD	D	U	A	SA
How do you define sustainability for your company?					
Do you have a sustainability strategy?					
Do you have a sustainability policy?					
Do you have a sustainability officer or team?					
Do you have a sustainability committee or board?					

Do you have a sustainability budget?					
Do you have sustainability goals or targets?					
Do you monitor and measure your sustainability performance?					
Do you report on your sustainability performance?					
Do you comply with environmental laws and regulations?					
Do you assess and manage your environmental risks and opportunities?					
Do you measure and reduce your greenhouse gas emissions?					
Do you measure and reduce your energy consumption?					
Do you measure and reduce your water consumption?					
Do you measure and reduce your waste generation?					
Do you prevent and mitigate environmental pollution and spills?					
Do you use renewable or low-carbon energy sources?					
Do you use environmentally friendly materials and products?					
Do you implement circular economy principles?					
Do you comply with labor and human rights laws and standards?					
Do you assess and manage your social risks and opportunities?					
Do you ensure fair and equal treatment of your employees?					
Do you ensure health and safety of your employees?					
Do you provide training and development opportunities for your employees?					
Do you engage and communicate with your employees?					
Do you support employee well-being and work-life balance?					
Do you respect and promote diversity and inclusion in your workplace?					
Do you contribute to social and community development?					
Do you respect and protect human rights in your value chain?					
Do you comply with corporate governance laws and standards?					
Do you assess and manage your governance risks and opportunities?					
Do you have a clear and transparent governance structure and process?					
Do you have a code of conduct and ethics for your business?					
Do you prevent and combat corruption and bribery in your business?					
Do you ensure data protection and privacy in your business?					

Do you engage and communicate with your stakeholders?					

Section D: Green Transformational Leadership Assessment

Tick (√) in the appropriate spaces provided below:

SD = Strongly Disagree; D = Disagree; U = Uncertain; A = Agree; SA = Strongly Agree

Question	SD	D	U	A	SA
I am inspired by my leader's vision for environmental sustainability.					
My leader expresses confidence that we can achieve our environmental goals.					
My leader emphasizes the importance of having a collective sense of mission for the environment.					
My leader encourages me to think of innovative ways to improve our environmental performance.					
My leader leads by example in terms of environmental values and behaviors.					
My leader instills pride in me for being environmentally friendly.					
My leader acts in ways that build my respect and trust for him/her on environmental issues.					
My leader considers the ethical and environmental consequences of his/her decisions.					
My leader gives me personal attention and support on environmental issues.					
My leader understands my environmental needs and concerns.					
My leader provides me with coaching and mentoring to enhance my environmental skills and knowledge.					
My leader recognizes and appreciates my environmental efforts and achievements.					
My leader challenges me to rethink some of my assumptions and beliefs about the environment.					
My leader stimulates me to find solutions to environmental problems that we face.					
My leader encourages me to question the status quo and seek new ways of doing things for the environment.					
My leader fosters a climate of learning and experimentation on environmental issues.					

Section E: Green Reward Payments Assessment

Tick (√) in the appropriate spaces provided below:

SD = Strongly Disagree; D = Disagree; U = Uncertain; A = Agree; SA = Strongly Agree

Question	SD	D	U	A	SA

I am recognized and rewarded for my environmental efforts and achievements.					
I receive constructive feedback on my environmental performance.					
My environmental performance is taken into account in my performance appraisal.					
My environmental performance influences my career progression opportunities.					
My environmental performance affects my pay level.					
My environmental performance is linked to other non-monetary rewards (e.g., training, flexible work arrangements, etc.).					

R CODES

NORMALITY TESTS IN R

```
# Load the `readxl` package

Library(readxl)


# Read the Excel file into R

#import data to R studio

data <- read_excel("data2.xlsx")

install.packages("nortest")

Llibrary(nortest)


# Load the necessary library for normality tests

Library(nortest)

Library(writexl)
```

```
# Load the necessary library for normality tests
library(nortest)
library(writexl)

# Extract the first set of variables (EGC1 to EGC26) into vectors
egc_matrix <- cbind(data2$EGC1, data2$EGC2, data2$EGC3, data2$EGC4, data2$EGC5, data2$EGC6, data2$EGC7, data2$EGC8, data2$EGC9, data2$EGC10,
                    data2$EGC11, data2$EGC12, data2$EGC13, data2$EGC14, data2$EGC15, data2$EGC16, data2$EGC17, data2$EGC18ata2$EGC19, data2$EGC20,
                    data2$EGC21, data2$EGC22, data2$EGC23, data2$EGC24, data2$EGC25, data2$EGC26)

# Check sample size for each variable and conduct normality tests
results <- data.frame(Variable = character(), Test_Result = character(), stringsAsFactors = FALSE)
for (i in 1:26) {
  var_name <- paste0("EGC", i)
  sample_size <- sum(!is.na(egc_matrix[, i]))
  if (sample_size < 8) {
    result <- paste("Sample size for", var_name, "is less than 8. Normality test cannot be performed.")
  } else {
    normality_test <- ad.test(egc_matrix[, i])
    result <- paste("p-value:", normality_test$p.value, ", Test statistic:", normality_test$statistic)
  }
  results <- rbind(results, data.frame(Variable = var_name, Test_Result = result, stringsAsFactors = FALSE))
}
```

```
# Export results to Excel

write_xlsx(results, "EGC_normality_test_results.xlsx")


# Extract the second set of variables (ESG1 to ESG36) into a matrix

Esg_matrix <- cbind(data2$ESG1, data2$ESG2, data2$ESG3, data2$ESG4, data2$ESG5,
data2$ESG6, data2$ESG7, data2$ESG8, data2$ESG9, data2$ESG10,

                    Data2$ESG11, data2$ESG12, data2$ESG13, data2$ESG14, data2$ESG15,
data2$ESG16, data2$ESG17, data2$ESG18, data2$ESG19, data2$ESG20,

                    Data2$ESG21, data2$ESG22, data2$ESG23, data2$ESG24, data2$ESG25,
data2$ESG26, data2$ESG27, data2$ESG28, data2$ESG29, data2$ESG30,

                    Data2$ESG31, data2$ESG32, data2$ESG33, data2$ESG34, data2$ESG35,
data2$ESG36)


# Check sample size for each variable and conduct normality tests

Results <- data.frame(Variable = character(), Test_Result = character(), stringsAsFactors =
FALSE)

For (I in 1:36) {

  Var_name <- paste0(“ESG”, i)

  Sample_size <- sum(!is.na(esg_matrix[, i]))

  If (sample_size < 8) {

    Result <- paste(“Sample size for”, var_name, “is less than 8. Normality test cannot be
performed.”)

  } else {

    Normality_test <- ad.test(esg_matrix[, i])

    Result <- paste(“p-value:”, normality_test$p.value, “, Test statistic:”, normality_test$statistic)

  }

  Results <- rbind(results, data.frame(Variable = var_name, Test_Result = result, stringsAsFactors
= FALSE))

}


# Export results to Excel
```

```
Write_xlsx(results, “ESG_normality_test_results.xlsx”)


# Extract the third set of variables (GTL1 to GTL16) into a matrix

gtl_matrix <- cbind(data2$GTL1, data2$GTL2, data2$GTL3, data2$GTL4, data2$GTL5, data2$GTL6, data2$GTL7, data2$GTL8, data2$GTL9, data2$GTL10,

                    data2$GTL11, data2$GTL12, data2$GTL13, data2$GTL14, data2$GTL15, data2$GTL16)


# Check sample size for each variable and conduct normality tests

results <- data.frame(Variable = character(), Test_Result = character(), stringsAsFactors = FALSE)

for (i in 1:16) {

  var_name <- paste0("GTL", i)

  sample_size <- sum(!is.na(gtl_matrix[, i]))

  if (sample_size < 8) {

    result <- paste("Sample size for", var_name, "is less than 8. Normality test cannot be performed.")

  } else {

    normality_test <- ad.test(gtl_matrix[, i])

    result <- paste("p-value:", normality_test$p.value, ", Test statistic:", normality_test$statistic)

  }

  results <- rbind(results, data.frame(Variable = var_name, Test_Result = result, stringsAsFactors = FALSE))

}


# Export results to Excel

write_xlsx(results, "GTL_normality_test_results.xlsx")



# Extract the fourth set of variables (GRP1 to GRP6) into a matrix
```

```
grp_matrix <- cbind(data2$GRP1, data2$GRP2, data2$GRP3, data2$GRP4, data2$GRP5, data2$GRP6)

# Check sample size for each variable and conduct normality tests

results <- data.frame(Variable = character(), Test_Result = character(), stringsAsFactors = FALSE)

for (i in 1:6) {

  var_name <- paste0("GRP", i)

  sample_size <- sum(!is.na(grp_matrix[, i]))

  if (sample_size < 8) {

    result <- paste("Sample size for", var_name, "is less than 8. Normality test cannot be performed.")

  } else {

    normality_test <- ad.test(grp_matrix[, i])

    result <- paste("p-value:", normality_test$p.value, ", Test statistic:", normality_test$statistic)

  }

  results <- rbind(results, data.frame(Variable = var_name, Test_Result = result, stringsAsFactors = FALSE))

}


# Export results to Excel

write_xlsx(results, "GRP_normality_test_results.xlsx")
```

CORRELATION ANALYSIS IN R

```
#import data to R studio

install.packages(“xlsx”)

install.packages(“writexl”)

 library(xlsx)

library(writexl)

# Extract the EGC variables (EGC1 to EGC26) into a matrix
```

```
egc_matrix <- data2[, paste0("EGC", 1:26)]

# Calculate Pearson correlation coefficients
correlation_matrix <- cor(egc_matrix, use = "pairwise.complete.obs")

# Find variables with correlation coefficients greater than 0.8
high_correlation <- which(correlation_matrix > 0.8 & correlation_matrix < 1, arr.ind = TRUE)

# Identify variables to remove
vars_to_remove <- unique(c(high_correlation[,1], high_correlation[,2]))

# Create a new set of uncorrelated variables
uncorrelated_egc_matrix <- egc_matrix[, !colnames(egc_matrix) %in% vars_to_remove]

# Export the new set of uncorrelated variables to Excel
write_xlsx(uncorrelated_egc_matrix, "Uncorrelated_EGC_Variables.xlsx")

# Extract the ESG variables (ESG1 to ESG36) into a matrix
Esg_matrix <- data2[, paste0(“ESG”, 1:36)]

# Calculate Pearson correlation coefficients
Correlation_matrix <- cor(esg_matrix, use = “pairwise.complete.obs”)

# Find variables with correlation coefficients greater than 0.8
High_correlation <- which(correlation_matrix > 0.8 & correlation_matrix < 1, arr.ind = TRUE)

# Identify variables to remove
Vars_to_remove <- unique(c(high_correlation[,1], high_correlation[,2]))
```

```
# Create a new set of uncorrelated variables
Uncorrelated_esg_matrix <- esg_matrix[, !colnames(esg_matrix) %in% vars_to_remove]

# Export the new set of uncorrelated variables to Excel
Write_xlsx(uncorrelated_esg_matrix, "Uncorrelated_ESG_Variables.xlsx")


# Extract the GTL variables (GTL1 to GTL14) into a matrix
Gtl_matrix <- data2[, paste0("GTL", 1:16)]

# Calculate Pearson correlation coefficients
Correlation_matrix <- cor(gtl_matrix, use = "pairwise.complete.obs")

# Find variables with correlation coefficients greater than 0.8
High_correlation <- which(correlation_matrix > 0.8 & correlation_matrix < 1, arr.ind = TRUE)

# Identify variables to remove
Vars_to_remove <- unique(c(high_correlation[,1], high_correlation[,2]))

# Create a new set of uncorrelated variables
Uncorrelated_gtl_matrix <- gtl_matrix[, !colnames(gtl_matrix) %in% vars_to_remove]

# Export the new set of uncorrelated variables to Excel
Write_xlsx(uncorrelated_gtl_matrix, "Uncorrelated_GTL_Variables.xlsx")


# Extract the GRP variables (GRP1 to GRP6) into a matrix
```

```
Grp_matrix <- data2[, paste0("GRP", 1:6)]

# Calculate Pearson correlation coefficients
Correlation_matrix <- cor(grp_matrix, use = "pairwise.complete.obs")

# Find variables with correlation coefficients greater than 0.8
High_correlation <- which(correlation_matrix > 0.8 & correlation_matrix < 1, arr.ind = TRUE)

# Identify variables to remove
Vars_to_remove <- unique(c(high_correlation[,1], high_correlation[,2]))

# Create a new set of uncorrelated variables
Uncorrelated_grp_matrix <- grp_matrix[, !colnames(grp_matrix) %in% vars_to_remove]

# Export the new set of uncorrelated variables to Excel
Write_xlsx(uncorrelated_grp_matrix, "Uncorrelated_GRP_Variables.xlsx")
```

CRONBACH RELIABILITY TEST IN R

```
#import data to R studio
# Install required packages
Install.packages("readxl")
Install.packages("psych")

# Load the libraries
Library(readxl)
Library(psych)
```

```
Load the data from the Excel file "EGC.xlsx"
data <- read_excel("EGC.xlsx")

# Remove any rows with missing or non-numeric values in EGC variables
egc_variables <- data[, c("EGC1", "EGC2", "EGC3", "EGC4", "EGC5", "EGC6", "EGC7", "EGC8", "EGC9", "EGC10",
                          "EGC11", "EGC12", "EGC13", "EGC14", "EGC15", "EGC16", "EGC17", "EGC18", "EGC19",
                          "EGC20", "EGC21", "EGC22", "EGC23", "EGC24", "EGC25", "EGC26")]
egc_variables <- egc_variables[complete.cases(egc_variables), ]

# Calculate Cronbach's alpha
alpha_egc <- cronbach.alpha(egc_variables)

print(alpha_egc)

# Load the data from the Excel file “ESG.xlsx”
Data_esg <- read_excel(“ESG.xlsx”)

# Remove any rows with missing or non-numeric values in ESG variables
Esg_variables <- data_esg[, paste0(“ESG”, 1:36)]
Esg_variables <- esg_variables[complete.cases(esg_variables), ]

# Calculate Cronbach’s alpha
Alpha_esg <- cronbach.alpha(esg_variables)

Print(alpha_esg)

# Load the data from the Excel file “GTL.xlsx”
```

```
Data_gtl <- read_excel("GTL.xlsx")

# Remove any rows with missing or non-numeric values in GTL variables
Gtl_variables <- data_gtl[, paste0("GTL", 1:16)]
Gtl_variables <- gtl_variables[complete.cases(gtl_variables), ]

# Calculate Cronbach's alpha
Alpha_gtl <- cronbach.alpha(gtl_variables)
Print(alpha_gtl)



# Load the data from the Excel file "GRP.xlsx"
Data_grp <- read_excel("GRP.xlsx")
# Remove any rows with missing or non-numeric values in GRP variables
Grp_variables <- data_grp[, paste0("GRP", 1:6)]
Grp_variables <- grp_variables[complete.cases(grp_variables), ]

# Calculate Cronbach's alpha
Alpha_grp <- cronbach.alpha(grp_variables)
Print(alpha_grp)
```

COMPOSITE RELIABILITY TEST RESULTS IN R

```
#import data to R studio
#install and load necessary libraries
library(psych)
# Extract the columns containing your variables
Variables <- data2[, c("EGC1", "EGC2", "EGC3", "EGC4", "EGC5", "EGC6", "EGC7",
"EGC8", "EGC9", "EGC10",
```

```
                "EGC11", "EGC12", "EGC13", "EGC14", "EGC15", "EGC16", "EGC17",
"EGC18", "EGC19",
                "EGC20", "EGC21", "EGC22", "EGC23", "EGC24", "EGC25", "EGC26")]

# Perform composite reliability test
Reliability_EGC <- alpha(variables)

# View the results
Print(reliability_EGC)



# Extract the columns containing your variables
Variables <- data2[, c("ESG1", "ESG2", "ESG3", "ESG4", "ESG5", "ESG6", "ESG7", "ESG8",
"ESG9", "ESG10",
                "ESG11", "ESG12", "ESG13", "ESG14", "ESG15", "ESG16", "ESG17",
"ESG18", "ESG19",
                "ESG20", "ESG21", "ESG22", "ESG23", "ESG24", "ESG25", "ESG26",
"ESG27", "ESG28",
                "ESG29", "ESG30", "ESG31", "ESG32", "ESG33", "ESG34", "ESG35",
"ESG36")]

# Perform composite reliability test
Reliability_ESG <- alpha(variables)

# View the results
Print(reliability_ESG)

# Extract the columns containing your GTL variables
Variables_gtl <- data2[, paste0("GTL", 1:16)]
```

```
# Perform composite reliability test for GTL variables
Reliability_gtl <- psych::alpha(variables_gtl)

# View the reliability results for GTL variables
Print(reliability_gtl)


# Extract the columns containing your GRP variables
Variables_grp <- data2[, paste0(“GRP”, 1:6)]

# Perform composite reliability test for GRP variables
Reliability_grp <- psych::alpha(variables_grp)

# View the reliability results for GRP variables
Print(reliability_grp)
```

SEM ANALYSIS IN R

```
# Install and load necessary libraries
install.packages("pls")
install.packages(“lavaan”)
install.packages("writexl")
library(readxl)
library(writexl)
library(pls)
 library(lavaan)
Load the lavaan package
library(lavaan)

# Define the CFA model
```

```
cfa_model <- '
  # Define the measurement model for EGC
  EGC =~ EGC1 + EGC2 + EGC3 + EGC4 + EGC5 + EGC6 + EGC7 + EGC8 + EGC9 + EGC10 + EGC11 + EGC12 + EGC13 + EGC14 + EGC15 + EGC16 + EGC17 + EGC18 + EGC19 + EGC20 + EGC21 + EGC22 + EGC23 + EGC24 + EGC25 + EGC26

  # Define the measurement model for ESG
  ESG =~ ESG1 + ESG2 + ESG3 + ESG4 + ESG5 + ESG6 + ESG7 + ESG8 + ESG9 + ESG10 + ESG11 + ESG12 + ESG13 + ESG14 + ESG15 + ESG16 + ESG17 + ESG18 + ESG19 + ESG20 + ESG21 + ESG22 + ESG23 + ESG24 + ESG25 + ESG26 + ESG27 + ESG28 + ESG29 + ESG30 + ESG31 + ESG32 + ESG33 + ESG34 + ESG35 + ESG36
'

# Fit the CFA model
cfa_result <- sem(cfa_model, data = file)

# Summarize the results
summary(cfa_result)
```

Moderating Effects of GTL on EGC and ESG

```
# Load required libraries
library(pls)
library(writexl)

# Assuming 'file2' is your data frame containing relevant variables
# Item Selection: Choose items for each construct (using pattern)
GTL <- paste0("GTL_item", 1:16)
ESG <- paste0("ESG_item", 1:36)
EGC <- paste0("EGC_item", 1:26)

# Update GTL_items to match the actual column names
```

```
GTL_items <- paste0("GTL", 1:16)
# Now try to subset the columns again
Subset_GTL <- file2[, GTL_items, drop = FALSE]

# Update ESG_items to match the actual column names
ESG_items <- paste0("ESG", 1:36)
# Now try to subset the columns again
Subset_ESG <- file2[, ESG_items, drop = FALSE]

# Update EGC_items to match the actual column names
EGC_items <- paste0("EGC", 1:26)
# Now try to subset the columns again
Subset_EGC <- file2[, EGC_items, drop = FALSE]

# Data Aggregation: Calculate construct scores
file2$GTL_score <- rowSums(Subset_GTL)
file2$ESG_score <- rowSums(Subset_ESG)
file2$EGC_score <- rowSums(Subset_EGC)

# Moderation Variable Construction: Create interaction term
file2$GTL_EGC_interaction <- file2$GTL_score * file2$EGC_score

# Combine Data: Create a single dataset for analysis
model_data <- data.frame(
  GTL_score = file2$GTL_score,
  ESG_score = file2$ESG_score,
  EGC_score = file2$EGC_score,
  GTL_EGC_interaction = file2$GTL_EGC_interaction
)
```

```
# Perform PLS analysis
model_pls <- plsr(GTL_score ~ ESG_score + EGC_score + GTL_EGC_interaction, data =
model_data, scale = TRUE)

# Extract coefficients from the PLS model
coefficients <- coef(model_pls)

# Display the coefficients
print(coefficients)

# Convert coefficients to data frame
coefficients_df <- as.data.frame(coefficients)

# Save coefficients to Excel file
write_xlsx(coefficients_df, "coefficients.xlsx")

# Assuming you have already performed your PLS moderation analysis and obtained coefficients
# Let's assume 'boot_coefs' contains bootstrapped coefficients (similar to your original code)

# Calculate p-values for each coefficient
P_values <- numeric(length = ncol(boot_coefs))
For (i in 1:ncol(boot_coefs)) {
  P_values[i] <- sum(boot_coefs[, i] <= coefficients_df[i,]) / B
}

# If p-value is greater than 0.5, calculate the complement to ensure it's between 0 and 1
P_values <- ifelse(p_values > 0.5, 1 – p_values, p_values)

# Display p-values
Print(p_values)
```

Moderating Effects of GRP on EGC and ESG

```
# Load required libraries
library(pls)
library(writexl)

# Assuming 'file' is your data frame containing relevant variables

# Item Selection: Choose items for each construct (using pattern)
GRP <- paste0("GRP_item", 1:6)
ESG <- paste0("ESG_item", 1:36)
EGC <- paste0("EGC_item", 1:26)

# Update GRP_items to match the actual column names
GRP_items <- paste0("GRP", 1:6)
# Now try to subset the columns again
Subset_GRP <- file[, GRP_items, drop = FALSE]

# Update ESG_items to match the actual column names
ESG_items <- paste0("ESG", 1:36)
# Now try to subset the columns again
Subset_ESG <- file[, ESG_items, drop = FALSE]

# Update EGC_items to match the actual column names
EGC_items <- paste0("EGC", 1:26)
# Now try to subset the columns again
Subset_EGC <- file[, EGC_items, drop = FALSE]
```

```
# Data Aggregation: Calculate construct scores
file$GRP_score <- rowSums(Subset_GRP)
file$ESG_score <- rowSums(Subset_ESG)
file$EGC_score <- rowSums(Subset_EGC)

# Moderation Variable Construction: Create interaction term
file$GRP_EGC_interaction <- file$GRP_score * file$EGC_score

# Combine Data: Create a single dataset for analysis
model_data <- data.frame(
  GRP_score = file$GRP_score,
  ESG_score = file$ESG_score,
  EGC_score = file$EGC_score,
  GRP_EGC_interaction = file$GRP_EGC_interaction
)

# Perform PLS analysis
model_pls <- plsr(GRP_score ~ ESG_score + EGC_score + GRP_EGC_interaction, data =
model_data, scale = TRUE)



# Extract coefficients from the PLS model
result <- coef(model_pls)

# Display the coefficients
print(result)

# Convert coefficients to data frame
coefficients_df <- as.data.frame(result)
```

```
# Save coefficients to Excel file
write_xlsx(coefficients_df, "coefficients.xlsx")

# Assuming you have already performed your PLS moderation analysis and obtained coefficients
# Let's assume 'boot_coefs' contains bootstrapped coefficients (similar to your original code)

# Calculate p-values for each coefficient
p_values <- numeric(length = ncol(boot_coefs))
for (i in 1:ncol(boot_coefs)) {
  p_values[i] <- sum(boot_coefs[, i] <= coefficients_df[i,]) / B
}

# If p-value is greater than 0.5, calculate the complement to ensure it's between 0 and 1
p_values <- ifelse(p_values > 0.5, 1 - p_values, p_values)

# Display p-values
print(p_values)
```