

## What is the Role of Sustainability in the Relationship between Green Transformational Leadership and Firm Performance?

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### Abstract

The aim of the research is to understand the relationship between green transformational leadership and firm performance, evaluating the role of sustainability strategies in this connection. Increasing global environmental issues and social inequalities necessitate companies to prioritize sustainability principles not only for financial concerns but also because of green transformation. In this context, focusing on the role of sustainability strategies is the main objective of the research. Quantitative research methods, specifically the cross-sectional survey method, were employed for data collection and analysis. A sample of 391 white-collar employees working in companies operating in Turkey was determined using the convenience sampling method. The data collected through surveys was analyzed using the AMOS 24 statistical program. The findings indicate that green transformational leadership is influential on firm performance, environmental sustainability, and economic sustainability. Additionally, economic sustainability was found to play a mediating role in the relationship between green transformational leadership and firm performance. It is expected that the findings obtained will provide a significant foundation for business leaders, guiding them in the development of sustainability-based strategies.

**Key words:** green transformational leadership, firm performance, and sustainability

**JEL Code:** L21, L25, M14, M20

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## **1.Introduction**

Sustainability and green transformational leadership are significant topics in today's business world, and addressing these issues together can positively impact a company's performance. Sustainability involves a company continuing its business activities by considering environmental, social, and economic factors. This ensures that operations are conducted in a way that allows future generations to benefit from the same resources (Çimen, 2019). This approach also responds to the expectations of customers, investors, and employees (Beşer and Beşer, 2021).

One of the variables examined in the study, firm performance, is the rate at which companies achieve their goals based on periodic results. Measuring firm performance is not only about measuring the level of success in business activities but also involves measuring process variables covering business outputs (Harbour, 2002). Green transformational leadership, a new leadership concept that goes beyond traditional business models, stands out as a critical factor influencing the environmental and economic performance of businesses. In addition to the increasing interest in leadership studies, the race to gain a competitive advantage through a sustainable business strategy highlights organizations' pursuit of green strategies, considering the numerous adverse effects of industrialization on the environment (Çop et al., 2021). The green transformational leadership style shapes firm performance by integrating elements into the organizational culture, such as environmental awareness, creating a sustainability vision, and encouraging employees to engage in eco-friendly actions (Bulut and Nazlı, 2020). Consequently, businesses aspiring to achieve sustainability have begun to feel the necessity to consciously implement green-focused management systems. Green transformational leadership has become a fundamental strategy for businesses in various sectors and regions that have internalized the acknowledgment that they cannot disregard the environment (Yu and Ramanathan, 2015).

When reviewing the literature on corporate sustainability, it becomes evident that effective leadership is essential for the success of environmental management systems (Ramus and Steger 2000; Guest and Teplitzky 2010). Particularly, environmentally conscious leaders are emphasized to be more inclined towards the green transformational leadership style (Egri and Herman 2000). Researchers assert that green transformational leaders play a significant role in directing employees towards environmentally friendly behavior (Graves, Sarkis and Zhu 2013; Robertson, Kura 2016). The concept of green transformational leadership is defined as a behavioral style that motivates followers to achieve environmental goals, inspiring them to perform above expected levels of environmental performance (Gardner and Avolio, 1998). While researchers have discussed the positive impact of business managers on firm performance, they have often overlooked the leadership factor. Leadership behavior based on the natural resource-based theory is considered a crucial internal resource and capability of corporate environmental management (Singh et al., 2020). Managers who possess green transformational leadership values and are concerned with environmental issues focus their leadership activities on encouraging environmental initiatives and consistently leading the organization (Boiral, Talbot, and Paille, 2015). Consequently, the question arises: "How does managers' green transformational

leadership influence the proactive corporate environmental strategy, sustainability, and firm performance of a business?" It is believed that the relationship between green transformational leadership, firm performance, and sustainability is mutual and complex. Successfully implemented sustainability strategies and green transformational leadership behaviors can assist companies in achieving a more sustainable performance socially, environmentally, and economically (Iqbal et al., 2020). In this context, this study aims to examine the relationship between green transformational leadership, firm performance, and sustainability strategies, seeking to understand the role of sustainable strategies in the relationship between green transformational leadership and firm performance. The findings of the research provide a significant foundation for guiding leaders in developing sustainability-based strategies in the business world. The remaining sections of the study are organized as follows: Firstly, a literature review is conducted on green transformational leadership, firm performance, and sustainability strategies, and hypotheses are presented based on the theoretical framework developed for these variables. Subsequently, the methodology and findings of the research are presented, followed by practical implications and limitations of the study.

## **2.The Theoretical Background**

### **2.1. Green Transformational Leadership**

A transformational leader, by encouraging employees to generate new ideas, apply their knowledge, and learn new technologies, can create both an organizational awareness context and activate careful organizational processes. transformational leadership facilitates the introduction of new ideas by providing followers with vision, motivation, and intellectual stimulation (Bass, 1990). Green transformational leadership, based on traditional transformational leadership, can be described as a personality that engages in environmentally friendly actions, encourages subordinates to work beyond individual interests, strives for a shared green vision, challenges assumptions, and addresses environmental issues in novel ways (Chen and Chang, 2013). A leader who can motivate followers to achieve environmental goals and inspire them to perform beyond expectations can be identified as a green transformational leader (Özgül, 2020). Similarly, Robertson & Barling (2013) have conceptualized environment-specific transformational leadership by expanding the focus of target specific transformational leadership (transformational leadership that focuses on influencing a specific outcome of behaviors) to include environmental sustainability. They defined environment-specific transformational leadership as "a manifestation of transformational leadership in which the entirety of leadership behaviors is focused on promoting environmentally friendly initiatives." In parallel with these definitions, environment-specific transformational leadership can be considered synonymous with green transformational leadership (Robertson and Barling, 2013). A green transformational leader establishes close relationships with subordinates to enable them to develop skills related to environmental issues. As observed, green transformational leadership is a distinctive leadership style necessary for dealing with environmental issues and challenges at different stages of the organizational life cycle (Chen and Chang, 2013). Leaders exhibiting this leadership style

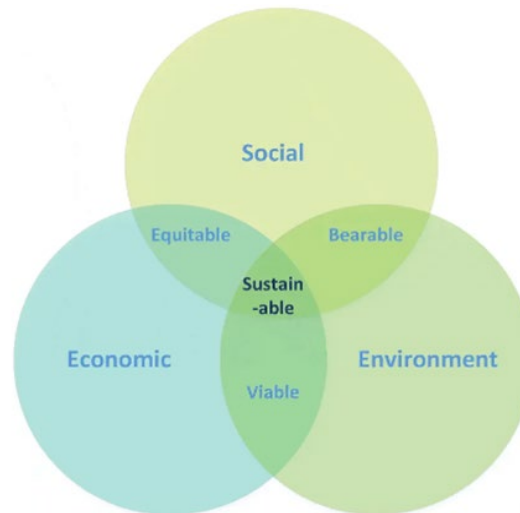
effectively articulate their organization's green vision and provide the necessary support to achieve corporate environmental goals. Additionally, "Green transformational Leadership" is defined as "the behaviors of leaders who motivate followers to achieve environmental goals and inspire followers to perform beyond expected levels of environmental performance." Chen et al. (2014) defines "green awareness" as "a conscious awareness state in which individuals are indirectly aware of environmental knowledge and the context and content of that knowledge."

## **2.2. Firm Performance**

Performance measurements can be expressed as a singular indicator of the outcomes of commercial activities within the framework of dynamic and expansive working conditions. Different performance measurements emerge according to changing economic and firm conditions. The goal of companies is to achieve objectives such as profitability, growth, and competitive superiority. To successfully achieve these objectives, businesses conduct performance evaluations. Performance evaluation enables the measurement of business objectives, and these criteria are analyzed by comparing them with standards, planned targets, the industry's situation, and results from previous years. For the realization of firm objectives, issues such as financial structure evaluation, profitability, liquidity, efficiency analyses, assessment of competitiveness, and determination of growth potential are determined through performance analysis (Ma, 2000). Performance measurement results are particularly important for managers and investors. Managers can evaluate the results of their activities to measure the performance of the business, while investors can assess the economic outcome of the capital they have invested or are considering investing in conjunction with firm performance. Green transformational leaders, on the other hand, can influence the internal values, environmental performance, and economic performance of a business. While a business aims to enhance its environmental performance by implementing green practices, it also seeks to improve its economic performance simultaneously. Therefore, the role of green transformational leaders influences firm performance by ensuring the business achieves its environmental and economic goals (Singh et al., 2020). In businesses with an environmentally focused culture, environmental protection is adopted as a significant value, and each employee fulfills it in their daily routines. This situation creates a company atmosphere/climate that encourages environmentally friendly behaviors and ensures full participation. Environmental protection behavior helps shape the business's eco-friendly image and contributes to increasing sales and market share (Aguilera-Caracuel, Ortiz-de-Mandojana, 2013).

## **2.3. Sustainability**

Sustainability is an indispensable phenomenon guiding the development of policies, products, technologies, management procedures, and ethical principles that safeguard human well-being, the environment, and future generations (Duic, Urbaniec, and Huisinigh, 2015). Within the scope of acting for the benefit of both current and future generations, sustainability advocates for a balanced integration of economic performance, social inclusivity, and environmental resilience (Pieroni, McAlone, and Pigosso, 2019).



**Figure 1: 3 Circle Model of Sustainability**

Source: ‘Sustainability and Sustainable Development - What is Sustainability and What is Sustainable Development?’ <https://circularecology.com/sustainability-and-sustainable-development.html>

The three dimensions referred to as economic, social, and environmental are identified as the fundamental pillars of sustainability (Hansmann, Mieg, and Frischknecht, 2012). Environmental sustainability involves creating conditions where humans and nature can coexist in productive harmony, allowing for the fulfillment of the social, economic, and environmental needs of future generations. Social sustainability is expressed as a positive condition within communities and as a process to achieve this condition. Economic sustainability is defined as economic development that does not have a negative impact on ecological or social sustainability (Gedik, 2020). The achievement of sustainability goals by businesses is dependent on the integration of the three dimensions and the transformation facilitated within this framework. It is recognized that leadership commitment and employee engagement are vital for achieving a transformation in sustainability. Leadership commitment forms a strong foundation for employee engagement, enabling employees to contribute to stakeholder engagement more effectively. Leaders in sustainability-embracing businesses adopt a long-term view compared to leaders in traditional businesses, articulate a clear vision, tolerate risk while following the vision, and successfully integrate sustainability into core business decisions. Additionally, they display a high level of sustainability commitment to inspire followers, acknowledging that transformative change requires numerous small-scale initiatives (Eccles, Miller, Serafeim, 2012). Research confirms that leadership commitment is a prerequisite for widespread adoption and implementation of sustainability within an organization (Rauter, Jonker, Baumgartner, 2017). In conclusion, green transformational leaders play a crucial role in enabling businesses to achieve their environmental and economic goals. A culture of environmental awareness within a business encourages the active participation of employees in promoting environmentally friendly behaviors. This

situation shapes the business's eco-friendly image, increases sales, enhances market share, and contributes to its sustainability (Aguilera-Caracuel, Ortiz-de-Mandojana, 2013).

### 3.Hypotheses Development

#### 3.1. The Relationship Between Green Transformational Leadership, Sustainability and Firm Performance

Leaders contribute to the transformation of organizations by influencing creativity through their inherent qualities (Andriopoulos, 2001; Gumusluoglu and Ilsev, 2009). Numerous studies have shown that transformational leadership, consisting of components such as intellectual stimulation, individualized consideration, charisma, and inspirational motivation, enhances organizational creativity (Koh, Lee, & Joshi, 2019; Wang, & Zhu, 2011; Chen, Li and Tang, 2009; Juyumaya & Torres, 2023). Green transformational leadership, on the other hand, is a leadership approach that plays a significant role in achieving the environmental sustainability goals of businesses (Chen & Chang, 2013). This leadership style promotes a focus on green practices and enhances sustainability performance by prioritizing environmental responsibilities. Green transformational leadership involves leaders who are sensitive to environmental values, guiding change within the organization, providing necessary resources for their employees to reach these goals, and exhibiting exemplary behavior to promote environmental sustainability (Öğretmenoğlu, Akova, & Göktepe, 2022; Begum, Ashfaq, Xia & Awan, 2022; Hameed et al., 2022). In addition, green transformational leadership's positive impact on firm performance is supported by various studies (Zhao & Huang, 2022; Hussain et al., 2022). Chen and Chang (2013) assert that green transformational leadership determines the green product development performance, while Li et al. (2020) state that green transformational leadership influences sustainable firm performance. Additionally, Kusi et al. (2021) indicate that sustainable firm performance will increase with green transformational leadership and organizational support. As highlighted by Singh et al. (2021), green practices and environmental sustainability strategies help businesses reduce costs and increase efficiency. Green practices, such as energy efficiency, waste reduction, and the use of renewable energy, help lower energy costs. These practices also enhance resource efficiency, elevate the reputation and brand value of businesses, leading to increased customer loyalty and revenue (Le, 2022). Based on the literature, green transformational leadership is believed to play a crucial role in shaping the sustainable businesses of the future and has an impact on firm performance. Considering the arguments mentioned above, the following hypothesis is developed:

*H<sub>1</sub>: There is a positive relationship between the employees' perception of green transformational leadership and firm performance.*

Firm performance, as mentioned in the theoretical section, determines the extent to which a business achieves its goals. As discussed in the literature, the role of leaders in green businesses affects firm performance in line with environmental and economic goals. In sustainability, which is referred to as the 'triple bottom line'

consisting of economic, environmental, and social dimensions, the dominant and most emphasized aspect is economic sustainability. The environmental and social dimensions are addressed later (Borland, 2009: 556). In other words, when examining the relationship between sustainability and firm performance, it is observed that businesses primarily focus on their financial performance. However, sustainability should also reflect the effort that companies put into meeting human needs and environmental goals, not just financial objectives (Demirkol, 2020: 63). The most compelling evidence for this is sustainability reports, which companies cannot ignore. Sustainability reporting, seen as a strategic weapon for a company's growth and survival, comes to the forefront. Traditional financial reporting, primarily covering economic activities, has lost its validity due to the increasing importance of social and environmental issues in the rapidly changing global economy (Laskar and Maji, 2018).

Sustainability must penetrate throughout the entire organization for successful integration. A prerequisite for a fully functioning performance management system from a sustainability perspective is becoming an integral part of strategic management and corporate planning (Krechovská and Procházková, 2014: 1150). At the same time, the three dimensions of sustainability are important for the success of businesses, and not only the economic dimension but also the environmental and social sustainability dimensions should be considered in the relationship with firm performance. In line with this, the developed hypotheses are explained below:

*H<sub>2</sub>: Economic sustainability strategies in businesses affect firm performance.*

*H<sub>3</sub>: Environmental sustainability strategies in businesses affect firm performance.*

*H<sub>4</sub>: Green transformational leadership affects environmental sustainability.*

Managing sustainability requires businesses to integrate sustainability principles into their processes. The most widely accepted definition of sustainability that has emerged over time is the combination of economic viability, social responsibility, and environmental responsibility (PWC, 2011). However, companies' CSR reporting practices and social disclosures are explained by the economic performance of companies (Yıldırım, Kocamus & Tokur). Therefore, the companies' system is aimed at maintaining economic sustainability. However, ensuring the managerial integration of sustainability will be possible not only by economic targets but also by considering environmental and social issues (Engin & Akgöz, 2013:88). Companies publish reports consisting mainly of economic data to flow information with their stakeholders. Developments in the world have shown that continuity of flow cannot be ensured with economic reporting alone. Companies have begun to reflect their sensitivity to participate in sustainability activities and accountability and transparency to their stakeholders by preparing reports regarding their positive policies on social and environmental issues (Dağistanlı & Çelik, 2023).

Green transformational leadership is not only a significant factor in enhancing firms' performance but also a leadership style influencing businesses' sustainability policies (Ling, 2019; Anderson, 2021; Özgül and Zehir, 2023). Sustainability is a concept encompassing environmental, social, and economic dimensions. Green transformational Leadership, by emphasizing environmental responsibilities and sustainable business practices, facilitates businesses in reducing environmental harm and focusing on social responsibilities. Therefore, the extent to which a company adheres to sustainability principles is closely related to the impact of leadership (Priyadarshini et al., 2023). Sustainability is generally associated with long-term success and resilience (Henderson & Loreau, 2023). The combination of green transformational Leadership and these sustainability principles leads the business to operate in an environmentally friendly and ethical manner in line with societal expectations (Bonfanti, et al., 2023). Moreover, businesses led by green transformational leaders offering eco-friendly products and services experience improved firm performance when developing business strategies focusing on environmental values (Arseculeratne & Yazdanifard, 2014). According to the study by Zameer, Wang & Yasmeen (2020), sustainability-focused differentiation strategies attract customer attention, reduce energy costs, and enhance financial performance. This situation is crucial for increasing the business's reputation and ensuring customer loyalty (Bota-Avram, 2023). The theoretical model of the study is illustrated in Figure 1. Based on the literature, it is believed that sustainability plays a mediating role in the relationship between green transformational leadership and firm performance. In this context, the following hypotheses are developed:

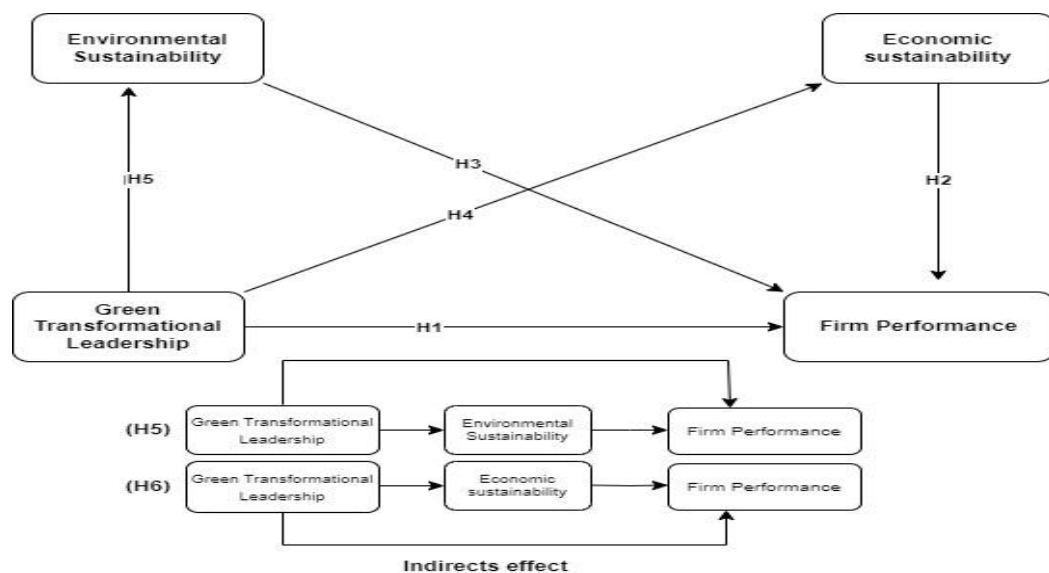


Figure 2: Theoretical Research Model



*H<sub>5</sub>: Environmental sustainability mediates the relationship between green transformational leadership and firm performance.*

*H<sub>6</sub>: Economic sustainability mediates the relationship between green transformational leadership and firm performance.*

## **4. Research Methodology**

### **Aim and Importance**

The primary aim of this research is to measure the perceptions of white-collar employees in companies regarding green transformative leadership, firm performance, and sustainability strategies. The study intends to examine the role of sustainability in the relationship between green transformative leadership and firm performance. The literature on green transformative leadership suggests that leaders' awareness of ecological and green issues encourages green innovative behaviors among employees (Chang, 2011). It is argued that this situation affects both sustainability strategies and firm performance. In this context, the findings obtained provide a significant foundation that can guide business leaders in developing sustainability-based strategies.

### **Population and Sample of Research:**

The research population consists of white-collar employees of companies operating in Turkey that have the ISO 14001 Environmental Management System Standard. The selection of the sample from companies with the ISO 14001 standard assumes that employees in these companies may have higher awareness of sustainability strategies and green transformative leadership variables in the research model. The sample size was determined using the sample calculation formula (Özdamar, 2003), resulting in a required sample size of 384 individuals. According to the calculation by Yazıcıoğlu and Erdoğan (2004), the sample size for a population size of 10 million and a sampling error of 0.05 is determined to be 384. Therefore, data collected from 391 white-collar employees using the convenient sampling method constitutes the sample of this study. In this context, it is assumed that the sample represents the population.

### **Data Collection Method and Tools:**

Prior to data collection, ethical approval for the study was obtained from the Istanbul Esenyurt University Ethics Committee on May 25, 2023, with decision number 2023/05-14. The data for the research were collected through surveys distributed online and in person between March 19 and June 2, 2022. Participation in the research was voluntary. The surveys were delivered to the researchers anonymously, and participants were not required to provide any information revealing their email addresses or identities. The completion time for the survey was approximately 7 minutes. The research used a convenience sampling method. Demographic information was collected, including gender, education level, the number of employees in the company, the sector in which the company operates, participant's position, and whether the company has the ISO 14001 Environmental Management System Standard.

### **Measurement Instruments:**

The measurement instruments used in the research are scales whose validity and reliability have been established in previous reputable studies. The credits for the measurement instruments are as follows: For the social dimension of sustainability, 6 expressions from Martinez and Del Bosque's (2014) study, and for the economic dimension, 4 expressions from the same study were used. The green transformative leadership scale consists of six items adapted and developed by Özgül (2020). To measure firm performance, a three-item scale developed by Seggie, Kim, and Cavusgil (2006) was used. The scales are in a 5-point Likert format, with scoring ranging from "1-Strongly Disagree" to "5-Strongly Agree."

### **Statistical analysis**

In this study, data obtained from 391 participants were analyzed using the AMOS 24 program. Structural Equation Modeling (SEM) was employed to examine complex relationships in the data. Structural Equation Modeling (SEM) is a statistical tool used to study and estimate cause-effect relationships by using empirical data and qualitative causal assumptions. SEM can test the interrelation and causality of the observed and latent variables simultaneously; therefore, it provides a more accurate approach for hypothesis testing. AMOS 24 statistical program was used to conduct the SEM of this study-based on the respondent's surveys, enabling the researchers to determine the complex relationship between green transformation. Due to the model fit indices not meeting the requirements in the research model, the sub-dimension of social sustainability, a component of the sustainability scale, was excluded. SEM is typically constructed by combining regression analysis and factor analysis (Hox and Bechger, 1998). However, what makes SEM unique includes the ability to consider potential measurement errors, the capacity to address these errors in the model evaluation process, and the flexibility to reveal initially unnoticed relationships. These features involve proposing refinements to enhance the quality of the research model up to third-order factors (Bagozzi and Yi, 2012). SEM also offers the advantage of conducting all these analyses simultaneously.

## **5. Research Findings**

### **Demographic Characteristics and Descriptive Statistics**

This research was conducted based on data from 391 individuals. The participants in the study consist of 40.4% females and 59.6% males. Among the participants, 70% have a bachelor's degree, 21% have a postgraduate degree, and 9% have an associate degree. In terms of the size of the companies where the participants work, 37% are employed in companies with 10-50 employees, 50% in companies with 51-100 employees, and 13% in companies with 101 or more employees. Regarding ISO 14001 certification, 76.7% of the companies where the participants work possess the ISO 14001 certification, while 23.3% do not have the ISO 14001 certification.

**Table 1: Descriptive statistics**

<b>Variables</b>	<b>N</b>	<b>Minimu m</b>	<b>Maximu m</b>	<b>Mea n</b>	<b>Std. Dev</b>
<b>Economic Sustainability</b>	39 1	0.86	4.01	3.16 1	0.82 5
<b>Environmental Sustainability</b>	391	0.78	3.88	2.634	0.821
<b>Green Transformational Leadership</b>	39 1	1.04	5.17	3.21 8	1.15 1
<b>Firm Performance</b>	39 1	0.98	4.84	3.49 0	1.02 1

The descriptive statistics of the factors obtained from the Structural Equation Model are presented in Table 1. The mean value and standard deviation of the factor loading for Economic Sustainability are determined as 4.01 and 3.16, respectively. For Environmental Sustainability, the mean value of the factor loading is found to be 3.88, with a standard deviation of 0.82. The mean value of the factor loading for Green Transformative Leadership is 3.21, and its standard deviation is 1.15. The factor loading for Firm Performance has a mean value of 4.84 and a standard deviation of 3.49. Additionally, the mean value of the factor loading for Green Transformative Leadership is 5.17, with a standard deviation of 3.49.

#### ***Findings regarding validity and reliability analysis***

The reliability of the factors related to the scale used in this study was tested through the CR (Composite Reliability) value. Additionally, AVE (Average Variance Extracted), MSV (Maximum Shared Variance), and ASV (Average Shared Variance) values were considered to test the convergent and discriminant validity of the factors. For convergent validity, AVE should be greater than 0.5, CR should be less than 0.7, and CR should be less than AVE. Furthermore, it is expected that MSV should be less than AVE, VE should be greater than AVE, and ASV should be less than  $\sqrt{AVE}$ , indicating the existence of discriminant validity due to inter-factor correlation (Hair et al., 2010; Gürbüz, 2019).

The calculated CR, AVE, MSV, and ASV values for the scale used are presented in Table 2. The fit indices obtained from the confirmatory factor analysis (CFA) - an overall statistical method of evaluating how well the model, specified in advance, fits the sample data ( $\chi^2/df = 1.528$ ; CFA = 0.974; GFI = 0.912; RMSA = 0.062; SRMR = 0.0399). CFA is applied to assess the factor solution of a set.

**Table 2: Reliability and validity statistics for measured construction**

	CR	AV E	MS V	AS V	(I)	(II)	(III )	(IV )
<b>(I) Green Transformational Leadership</b>	0.9 53	0.7 73	0.6 16	0.4 59	<b>0.8</b> <b>79</b>			
<b>(II) Environmental Sustainability</b>	0.8 66	0.6 86	0.6 16	0.4 30	0.7 85	<b>0.8</b> <b>28</b>		
<b>(III) Economic Sustainability</b>	0.8 60	0.6 14	0.4 80	0.4 05	0.6 18	0.5 95	<b>0.7</b> <b>83</b>	
<b>(IV) Firm Performance</b>	0.9 36	0.8 30	0.4 80	0.3 92	0.6 16	0.5 65	0.6 93	<b>0.9</b> <b>11</b>

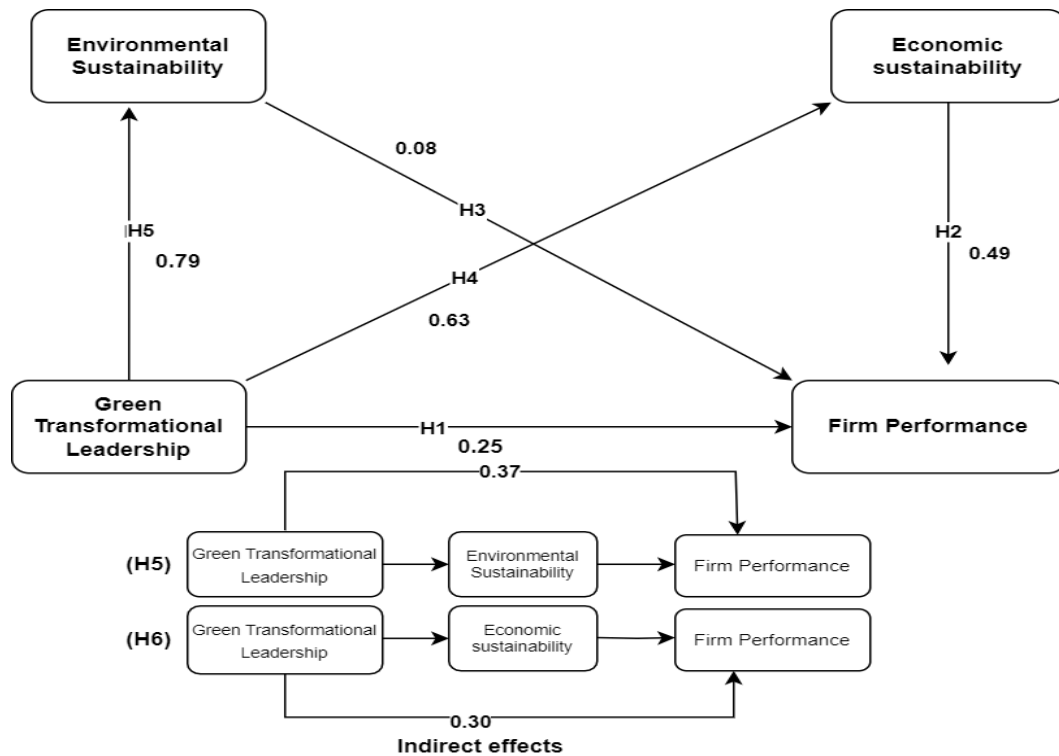
Notes: All the values on the diagonal are bold-faced and they are square root of AVE values, thus showing discriminant validity. ( $\chi^2/df = 1.528$ , CFI = 0.974, GFI = 0.912, RMSA = 0.062, SRMR = 0.0399; CR: (Composite Reliability, AVE: Average Variance Extracted, MSV: Maximum Shared Variance is because a higher degree of variances implies and allows for people to share common variances or experience more variance with each other, ASV: Average of Covariance)

Upon examining the results obtained, it is observed that all factor values are above 0.70. The situation where the AVE value of a factor is lower than its CR value and the AVE value is above 0.5 indicates that the factors have convergent validity. Additionally, if the AVE value of a factor is higher than its MSV and ASV values, it indicates that the factors have discriminant validity. Moreover, when the  $\sqrt{AVE}$  scores are higher than the inter-factor correlation, it implies the presence of discriminant validity.

### Hypothesis tests

After testing and confirming the measurement model, the research moved on to the latent variable structural model stage to test the research hypotheses. Figure 2 displays the standardized coefficients of the paths obtained from the structural model. The values of the fit indices obtained from the structural model indicate that the model has been confirmed ( $\chi^2/df = 1.55$ , CFI = 0.972, GFI = 0.921, RMSA = 0.063, SRMR = 0.453).

According to the results, it is observed that Green Transformative Leadership has a significant and positive impact on Firm Performance ( $\beta = 0.256$ ;  $p < 0.01$ ). Similarly, Economic Sustainability ( $\beta = 0.496$ ;  $p < 0.01$ ) and Environmental Sustainability ( $\beta = 0.08$ ;  $p < 0.05$ ) have positive and significant effects on Firm Performance.



**Figure 3: Modified Research Model**

As seen in Figure 3, hypotheses H1, H2, and H3 are supported by the obtained results. The impact of Green Transformative Leadership on Environmental Sustainability ( $\beta= 0.796$ ;  $p<0.01$ ) and Economic Sustainability ( $\beta= 0.632$ ;  $p<0.01$ ) is found to be positive and significant. Therefore, hypotheses H4 and H5 are supported.

The bootstrap method was employed to test Hypothesis (H6) regarding the mediating role of environmental sustainability in the relationship between Green Transformative Leadership and firm performance, as well as Hypothesis (H7) concerning the mediating role of economic sustainability. In the conducted research, the bootstrap method is claimed to provide more reliable results for mediation tests compared to traditional methods by Baron and Kenny (Baron and Kenny, 1986; Hayes, 2018; Gürbüz 2019). To conclude that the mediation effect is significant using the bootstrap method, the obtained lower and upper bounds should have the same direction (both positive or both negative), and the confidence interval should not include zero. In our bootstrap method, 5000 resampling selections were preferred, and predictions were made at a 95% confidence level.

According to the results, the mediating role of environmental sustainability in the relationship between Green Transformative Leadership and Firm performance is not significant ( $\beta= 0.376$ , C.I [-0.172, 0.425]). In other words, Hypothesis 6 is rejected. On the other hand, the mediating role of economic sustainability in the relationship between Green Transformative Leadership and

firm performance is confirmed based on the obtained statistics ( $\beta = 0.3087$ , C.I [0.16, 0.482]). Table 3 summarizes the path coefficients and hypothesis test results of the structural equation model.

**Table 3: Structural equation model results**

Hypotheses	PATH	B	Result
H1	Green Transformational Leadership → Firm Performance	0.25	Supported
H2	Economic Sustainability → Firm Performance	0.49	Supported
H3	Environmental Sustainability → Firm Performance	0.08	Supported
H4	Green Transformational Leadership → Environmental Sustainability	0.79	Supported
H5	Green Transformational Leadership → Economic Sustainability	0.63	Supported
H6	Green Transformational Leadership → Environmental Sustainability	0.37	Not Supported
H7	Green Transformational Leadership → Economic Sustainability	0.30	Supported

### Discussion of findings

This study examines the role of sustainability strategies in the relationship between green transformative leadership and firm performance. The findings obtained in this study indicate a positive and significant relationship between green transformative leadership and firm performance. Specifically, a positively low-level relationship (Beta=0.25) was identified between green transformative leadership and firm performance. Additionally, the relationship between green transformative leadership and sustainability strategies was examined. It was found that there is a high-level positive and significant relationship between economic and environmental sustainability dimensions and green transformative leadership and firm performance.

In the analysis of the mediating effect model, it was determined that the mediating role of environmental sustainability in the relationship between green transformative leadership and firm performance is not significant. However, the second mediating effect in the relationship between green transformative leadership and firm performance, measuring the mediating role of economic sustainability, was statistically confirmed. The findings suggest that when green transformative leaders make decisions focused on economic sustainability, firm performance can be enhanced. In this context, it can be argued that companies adopting green policies and having leaders with a focus on sustainability strategies gain a competitive advantage in a period where internal and external stakeholders increasingly show environmental sensitivity.

Reviewing the literature, no studies were found that specifically addressed green transformative leadership in the context of sustainability and firm performance. However, there has been an increase in the number of studies focusing on green transformative leadership in the last decade. This increase is thought to be due to the association of green leadership with various fields of study, as environmental awareness has grown in today's world. In the current era where environmental concerns are heightened, green transformative leadership takes the forefront in creating a sustainable environment. These leaders exhibit a management style that protects a sustainable economy in addition to a sustainable environment and instills environmental consciousness in their followers. Previous studies on green transformative leadership suggest that this leadership style is effective in fostering environmentally friendly behaviors and improving job performance (Tuna and Yıldız, 2023). According to Priyadarshini et al. (2023), environmental passion and strengthening green practices are crucial to achieving organizational environmental citizenship behavior through green transformative leadership. The study by Sun et al. (2022) suggests that green transformative leadership in small and medium-sized enterprises influences environmental performance, thereby increasing market share. Kusi et al. (2021) conducted research with employees of construction companies, indicating that the green transformative leadership approach is beneficial in enhancing employees' organizational social responsibilities. In their study in the automotive sector, Kerse et al. (2021) found that green transformative leadership enhances employees' green intrinsic motivation and positively influences green behavior. Huang et al. (2021) emphasized the importance of green transformative leadership for top management teams of technology manufacturing firms in achieving environmental performance and competitive advantage. Singha et al. (2020) conducted research on manufacturing companies, highlighting the mediating role of green human resource management practices in the impact of green transformative leadership on green innovation. Li et al. (2020) determined that green transformative leadership significantly affects green intrinsic motivation and green creativity among employees in the information technology industry. Wang et al. (2018) found that the value congruence between leaders and employees plays a mediating role in the relationship between green transformative leadership and employees' green behaviors. Zhou et al. (2018) emphasized that green transformative leadership, when matched with employees' green values, can create a green psychological

climate in organizations and enhance green product development performance. Zafar et al. (2017) conducted research on manufacturing industry employees, highlighting the significant role of green transformative leadership as a determinant of firms' green performance. Mittal & Dhar (2016) explored the impact of green transformative leadership on green organizational identity and found a positive effect, leading to the encouragement of green creativity within the organization. Chen et al. (2012) found that green transformative leadership behaviors are a crucial factor for increasing firms' green performances, as they enhance employees' green awareness and green self-efficacy. Chen & Chang (2013) conducted research with employees in the electronics industry, revealing that green dynamic capabilities and green transformative leadership have multiple effects on green creativity and green product development performance.

As evident from previous studies, the concept of green transformative leadership has been investigated in various fields. The style of green transformative leadership has been observed to have positive effects, particularly on motivation enhancement, self-efficacy, awareness creation, and creative thinking. Similarly, the impact of green transformative leadership on firm performance, especially on green performance and green product and service development performance, is understood. In the current scenario of high environmental degradation, putting a stop to this trend can be effectively achieved through the implementation of sustainability policies led by green transformative leaders. In this context, the research findings align with the notion that green transformative leadership is effective in influencing both environmental sustainability and economic sustainability.

Given the recent activities of organizations such as the United Nations Society, UNESCO, and the EU, a significant portion of which is dedicated to addressing environmental issues, and considering the mediation effect obtained in this research, there is an increased need for green transformative leaders. Therefore, it can be stated that green transformative leadership is crucial in increasing employees' green awareness and that firms' sustainability strategies significantly affect company performance. Moreover, the emergence of green transformative leaders in an organizational culture with sustainability-focused principles is inevitable.

### **Managerial implications**

This research highlights significant relationships between green transformative leadership, firm performance, and sustainability. The findings provide insights into various managerial practices for business executives and leaders. Firstly, embracing environmental responsibilities by leaders can enhance employee motivation and provide a competitive advantage by focusing on eco-friendly practices. Businesses can increase their financial success and achieve long-term sustainable growth by investing in environmentally friendly practices and sustainability-focused strategies. Managers should revise their business strategies to establish appropriate structures within the company to adopt and implement sustainability principles.



Our findings indicate that economic sustainability plays a mediating role in the relationship between green transformative leadership and firm performance. In this context, managers can balance environmental and financial goals by adopting economic sustainability strategies, thereby reducing environmental impact, and improving business performance. Understanding stakeholder expectations and emphasizing environmental and sustainability-focused efforts are crucial for businesses. These strategies can enhance customer satisfaction, strengthen supply chain reliability, and improve overall reputation.

### **Limitations and future research**

Like all research studies, this work has certain limitations. It focuses on a specific industry or geographic region, and the generalizability of the findings may vary across different sectors or regions. The study was conducted within a specific time frame, and future research could involve comparing data collected in different periods to understand long-term effects. The assumption that participants objectively responded to scale questions may be a limitation, and future studies could consider focusing on specific industries or comparing countries with cultural and economic differences. Additionally, a bibliometric analysis of studies focused on green transformative leadership, sustainability, and firm performance could be conducted in future research.

## **6. Conclusion**

This study aims to examine the relationships between green transformative leadership, firm performance, and sustainability. The findings highlight the significant impact of green transformative leadership on firm performance. Furthermore, it is determined that sustainability strategies play a critical role in shaping firm performance. These findings emphasize the importance of integrating green transformative leadership and sustainability strategies for leaders and managers in the business world to make sustainability-focused decisions. This integration is crucial not only to meet stakeholder expectations but also to create a more sustainable and better world environmentally and economically for future generations.

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