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INFLUENCE OF GREEN TRANSFORMATIONAL LEADERSHIP ON ENVIRONMENTAL PERFORMANCE THROUGH ENVIRONMENTAL KNOWLEDGE SHARING AND GREEN ORGANIZATIONAL CULTURE IN SURABAYA STATE UNIVERSITIES

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Abstract

The increasing severity of environmental problems requires higher education institutions to play an active role in implementing sustainable policies, one of which is Green Transformational Leadership (GTL). This study aims to analyze the effect of GTL on environmental performance (EP) based on student perceptions at state universities in Surabaya, with a focus on the mediating roles of environmental knowledge sharing (EKS) and green organizational culture (GOC). The study employs a quantitative, explanatory research approach. Data were collected via questionnaires from 179 students and analyzed using the partial least squares structural equation modeling (PLS-SEM) method to test the direct and indirect effects of the variables. The results showed that GTL contributes directly to EP, and then EKS mediates the influence of GTL on EP. GOC also mediates the influence of GTL on EP. Therefore, it is necessary to strengthen the role of GTL in higher education, as well as improve organizational culture and collaboration in sharing environmental knowledge, to support sustainable EP.

Keywords: ***Green Transformational Leadership, Environmental Knowledge Sharing, Green Organizational Culture, and Environmental Performance***

INTRODUCTION

Global environmental crises such as climate change, natural resource degradation, and global warming have become major challenges for all sectors, including higher education institutions. As centers of learning and scientific development, universities have a moral and strategic responsibility to promote transformation toward sustainability. In this context, leadership plays a crucial role, particularly leadership styles that are oriented toward environmental values, known as Green Transformational Leadership (GTL). Green Transformational Leadership is defined as a leader's ability to inspire and motivate organizational members to achieve sustainability goals through a clear environmental vision, fostering pro-environmental behavior, and creating an organizational culture that supports environmental conservation (Gustiah & Nurhayati, 2022; Robertson & Barling, 2017). In the higher education sector, campus leaders (rectors, deans, and other senior officials) hold a strategic position in internalizing sustainability values among the academic community, particularly students, through sustainable policies and managerial practices.

Previous studies have shown that GTL positively contributes to an organization's Environmental Performance (EP) (Cheema et al., 2020; Cop et al., 2021). However, this influence is not always direct. Factors such as Environmental Knowledge Sharing (EKS) and Green Organizational Culture (GOC) often serve as important mediators bridging this relationship (Aftab et al., 2022; Fatoki et al., 2021). EKS is the process of exchanging information and experiences about environmentally friendly practices among organizational members, while GOC reflects the collective values, norms, and practices that encourage environmentally oriented behavior within an institution. In Indonesia, the urgency of improving environmental performance is reflected in the 2024 Environmental Performance Index (EPI) ranking, which places Indonesia at 162nd out of 180 countries (Yale University, 2024). Nevertheless, several state universities (PTN) in Surabaya have demonstrated their commitment to green initiatives through their involvement in UI GreenMetric, such as Airlangga University, Sepuluh Nopember Institute of Technology, Surabaya State University, and the National Development University "Veteran" of East Java. These achievements indicate that the implementation of green leadership and the strengthening of an environmentally friendly organizational culture have begun to take place, although they are not yet evenly distributed across all PTNs.

Based on this background, this study aims to analyze the influence of Green Transformational Leadership on Environmental Performance at State Universities in Surabaya, by testing the mediating role of Environmental Knowledge Sharing and Green Organizational Culture. This research is expected to contribute theoretically to the development of leadership and environmental management studies, as well as provide practical recommendations for policymakers in the higher education sector to strengthen green transformation on campus.

LITERATURE REVIEW

Grand Theory (Triple Bottom Line Theory)

This study is based on John Elkington's (1997) Triple Bottom Line (TBL) as a grand theory, which asserts that organizational performance should be measured equally across three dimensions: profit (economic), people (social), and planet (environmental). In the context of higher education, the planet dimension is the main focus, given that campuses are not only educational institutions but also social actors responsible for ecological sustainability. This theory serves as the foundation for analyzing how green leadership styles can integrate sustainability values into institutional practices.

Green Transformational Leadership (GTL)

GTL is a leadership behavior that focuses on achieving a long-term environmental vision by inspiring, empowering, and instilling green values in members of the organization. GTL emphasizes the importance of pro-environmental behavior in every organizational process, including higher education (Robertson & Barling, 2017; Gustiah & Nurhayati, 2022).

GTL indicators (Robertson & Barling, 2017):

1. Green Idealized Influence
2. Green Inspirational Motivation
3. Green Intellectual Stimulation
4. Green Individualized Consideration

Studies such as Cheema et al. (2020) and Cop et al. (2021) indicate that GTL has a direct positive influence on Environmental Performance (EP). However, Saleem et al. (2024) show that the direct influence of GTL on EP is not significant, but the indirect influence through mediating variables (green self-efficacy and green empowerment) becomes significant. This inconsistency confirms the need to re-examine other mediating mechanisms in the context of higher education.

Environmental Knowledge Sharing (EKS)

EKS refers to a systematic process of disseminating and exchanging knowledge about environmental issues among individuals within an organization. In the context of a campus, EKS serves as the primary medium for disseminating green values and sustainable practices among students and academic staff (Van den Hooff & Ridder, 2019; Aftab et al., 2022).

EKS indicators (Van den Hooff & Ridder, 2019):

1. Collecting information about the environment.
2. Collecting knowledge about the environment.
3. Sharing information about the environment.
4. Sharing knowledge about the environment.
5. Sharing experiences about the environment.

Findings by Papagiannakis & Lioukas (2020) indicate that EKS plays a crucial role as a bridge between GTL and EP. However, Malik et al. (2024) found that EKS does not directly influence EP but only functions as a moderator. This is the basis for testing EKS as a mediator in the context of state universities in Indonesia, considering that the characteristics of EKS may differ between the industrial and educational sectors.

Green Organizational Culture (GOC)

GOC is a structure of values, norms, and organizational practices that explicitly support environmental sustainability (Fodor et al., 2021). GOC also reflects the level of internalization of ecological principles in organizational policies and actions.

GOC indicators (Pham et al., 2019):

1. Environmental Awareness
2. Environmental Commitment

3. Environmental Leadership
4. Environmental Innovation
5. Participation and Collaboration

Fatoki et al. (2021) state that GOC significantly contributes to EP, supported by green innovation. However, Purwanto et al. (2024) found that the direct influence of GOC on EP is not significant. These conflicting results reinforce the need to reanalyze the contribution of GOC, especially in the context of educational institutions with more explicit socio-ecological missions.

Environmental Performance (EP)

EP reflects the extent to which an organization is able to manage the ecological impact of its operational activities. In the context of campuses, EP includes energy efficiency, waste management, environmental education, and the development of green policies that are integrated into managerial and academic systems (Teerawattana & Yang, 2019).

EP indicators (Teerawattana & Yang, 2019):

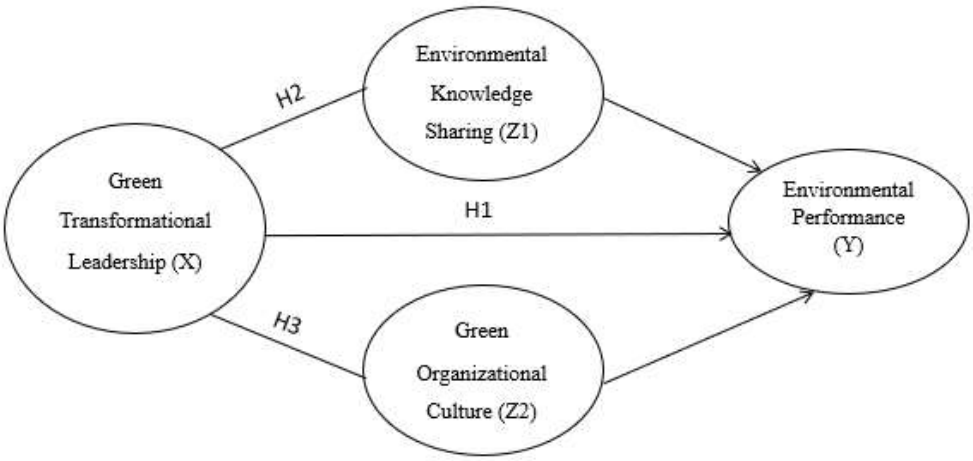
1. Awareness and implementation of environmentally friendly practices.
2. Participation in the formulation of sustainability policies.
3. Transparency in sustainability communication.
4. Waste management and recycling.
5. Environmental evaluation and commitment.
6. Cross-sector collaboration for sustainability.
7. Integration of sustainability into business/campus strategies.
8. Sustainability-based education and recruitment.
9. A work culture that supports environmental innovation.

Imran et al. (2021) and Dewanti et al. (2024) emphasize that EP is an outcome that is greatly influenced by leadership, culture, and knowledge sharing. However, most research has been conducted in the industrial sector and has not yet examined the education sector.

METHOD

This study is an explanatory study that uses a quantitative approach to examine the causal relationship between the variables of Green Transformational Leadership (X) and Environmental Performance (Y) with the mediating role of Environmental Knowledge Sharing (Z1) and Green Organizational Culture (Z2). The population in this study consists of active students from five state universities in Surabaya, namely Airlangga University, Sepuluh Nopember Institute of Technology, Surabaya State University, Sunan Ampel State Islamic University, and East Java National Development University "Veteran," with a total population of 176,626 students. The sampling technique used was proportionate stratified random sampling, resulting in 179 respondents who served as the units of analysis in this study. Data collection was conducted using an online questionnaire based on Google Forms distributed to respondents. Each statement item was measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The research instrument was developed based on indicators validated in previous studies and adapted to the context of this research. Data analysis was conducted using the Partial Least Squares-based Structural Equation Modeling (SEM-PLS) method. SEM-PLS was selected based on its ability to handle data with moderate sample sizes and complex structural models.

Framework of thought



This study will conduct tests and analyses using four variables, namely Green Transformational Leadership as the independent variable, Environmental Knowledge Sharing as the first mediating variable, Green Organizational Culture as the second mediating variable, and environmental performance as the dependent variable. As shown in the figure above, this study aims to examine the direct effect of the independent variable on the dependent variable and the indirect effect through the mediating variables. Within this research framework, the influence of Green Transformational Leadership on environmental performance through Environmental Knowledge Sharing and Green Organizational Culture as mediating variables will be tested and analyzed at state universities in Surabaya.

RESULT AND DISCUSSION

Respondent Profile

This study involved 179 active students from five state universities in Surabaya, with the largest distribution from UNESA (32.96%), followed by UNAIR, ITS, UINSA, and UPN "Veteran" East Java. The composition of respondents was almost balanced in terms of gender, consisting of 50.28% women and 49.72% men. The majority of respondents were from East Java (54.75%) and were predominantly from the 2022 and 2023 cohorts. Most respondents were from the social sciences and humanities disciplines (79.33%) and were pursuing undergraduate degrees (94.41%). These characteristics reflect the diversity of students' perceptions regarding leadership and campus performance.

Validity and Reliability Test

Validity testing was conducted using outer loading values and Average Variance Extracted (AVE). All indicators in this study had outer loading values above 0.50 and AVE values above 0.50, thus meeting the criteria for convergent validity. Meanwhile, construct reliability was tested using Composite Reliability (CR) and Cronbach's Alpha values, both of which showed values above 0.50. Thus, all constructs were deemed reliable and suitable for use in subsequent structural model testing.

Outer Model

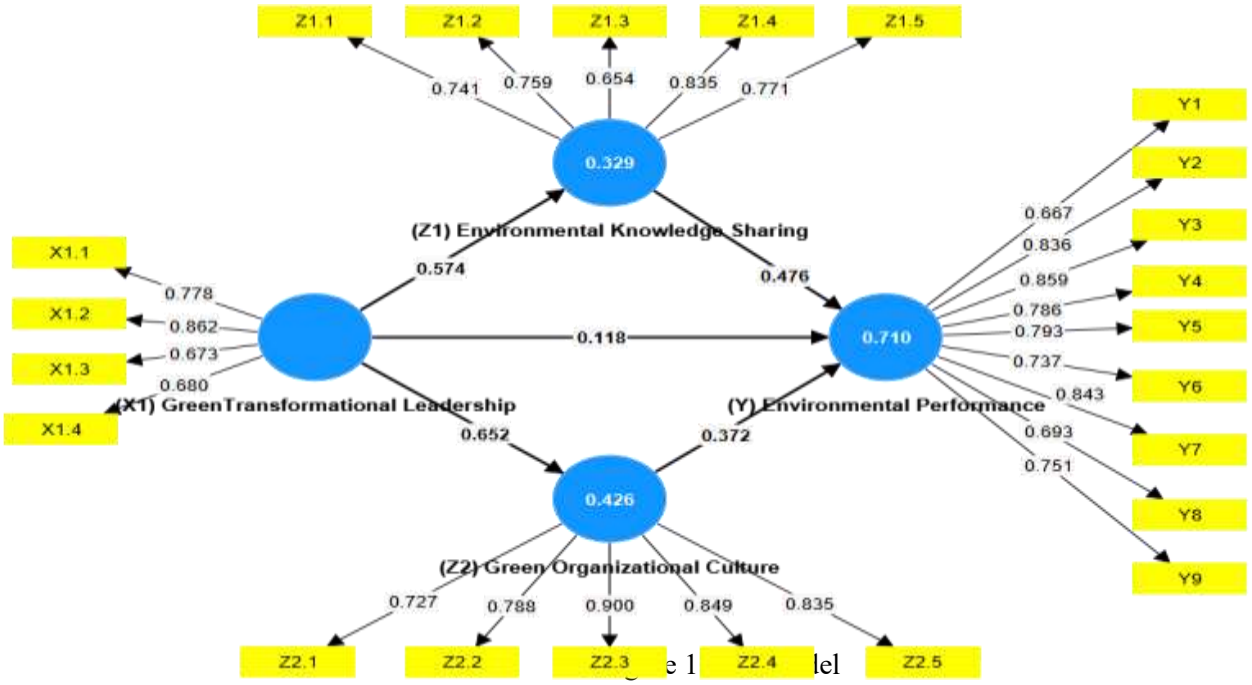


Figure 1 Model
source: Processed by Researchers (2025)

Based on the outer loading results above, all indicators in the variables studied show factor loading values greater than 0.5. For example, indicator X1.1 (Green idealized influence) has a value of 0.778, X1.2 (Green inspirational motivation) reaches 0.862, and X1.3 (Green intellectual stimulation) is 0.673, all of which indicate good convergent validity. Similar findings were observed in other indicators, such as Y2 (Employee participation in the formulation and implementation of sustainability policies) with a value of 0.836, Z1.4 (Sharing environmental knowledge) with a value of 0.835, and Z2.3 (Environmental Leadership) reaching 0.900. Overall, all indicators in the variables studied, such as Green Transformational Leadership (X1), Environmental Performance (Y), Environmental Knowledge Sharing (Z1), and Green Organizational Culture (Z2), have factor loadings greater than 0.5. This indicates that all indicators meet the criteria for convergent validity and can be considered valid as measures of the variables in question.

Inner Model

Structural model testing is done by looking at the R-Square value, which is a model fit test. Internal model testing can be seen from the R-Square value in the equation between latent variables. The R2 value explains how much the exogenous (independent/free) variables in the model are able to explain the endogenous (dependent/bound) variables

R-square

Table 1 R-Square Results

Overview

	R-square	R-square adjusted
(Y) Environmental Performance	0.710	0.705
(Z1) Environmental Knowledge Sharing	0.329	0.325
(Z2) Green Organizational Culture	0.426	0.422

Sumber: Pengolahan oleh Peneliti (2025)

Based on the results of structural model testing, the R-square value of 0.710 for Environmental Performance (Y) indicates that 71% of the variation in this variable can be explained by the constructs in the model, which indicates a strong explanatory power. Meanwhile, the R-square value for Environmental Knowledge Sharing (Z1) is 0.329 and for Green Organizational Culture (Z2) is 0.426, indicating that the model can only explain a small portion of the variation in these two variables, suggesting that significant influences from factors outside the model still exist. The consistency between the R-square and adjusted R-square values for the three variables indicates that the model is stable and free from signs of overfitting.

Hypothesis Testing

In hypothesis testing, two tests are carried out, namely direct influence and indirect influence tests.

Table 2 Results of Direct Effect Hypothesis Test

Path coefficients
Mean, STDEV, T values, p values

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
(X1) Green Transformational Leadership -> (Y) Environmental Performance	0.118	0.121	0.057	2.079	0.038

source: Processed by Researchers (2025)

Based on the results of the hypothesis test above for the direct effect between the variables in this study:

1. **Green Transformational Leadership has an effect on Environmental Performance**. Based on the results of the direct effect test, the path coefficient obtained is 0.118 with a p-value of 0.038, which is smaller than α = 0.05. These results indicate that Green Transformational Leadership has a positive and significant effect on Environmental Performance. Therefore, **hypothesis H1 is accepted.**

Table 3 Results of Indirect Effect Hypothesis Test

Specific indirect effects
Mean, STDEV, T values, p values

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
(X1) Green Transformational Leadership -> (Z1) Environmental Knowledge Sharing -> (Y) Environmental Performance	0,273	0,275	0,039	7,083	0,000
(X1) Green Transformational Leadership -> (Z2) Green Organizational Culture -> (Y) Environmental Performance	0,243	0,244	0,048	5,105	0,000

source: Processed by Researchers (2025)

2. **Environmental Knowledge Sharing mediates the influence of Green Transformational Leadership on Environmental Performance.** The test results show a path coefficient value of 0.273 with a p-value of 0.000, which is smaller than α = 0.05. This indicates that Environmental Knowledge Sharing significantly mediates the influence of Green Transformational Leadership on Environmental Performance. Thus, **hypothesis H2 is accepted.**
3. **Green Organizational Culture mediates the influence of Green Transformational Leadership on Environmental Performance**. The test results show a path coefficient value of 0.243 with a p-value of 0.000, which is less than α = 0.05. This proves that Green Organizational Culture significantly mediates the influence of Green Transformational Leadership on Environmental Performance. Therefore, **hypothesis H3 is accepted.**

DISCUSSION

Green Transformational Leadership berpengaruh terhadap Environmental Performance

The results of the study indicate that Green Transformational Leadership (GTL) has a positive and significant effect on Environmental Performance (EP), with a path coefficient value of 0.118 and a p-value of 0.038, which is below the 5% significance level (α = 0.05). This finding indicates that the stronger the implementation of transformational leadership based on sustainability values, the higher the environmental performance in the organization, in this case in the higher education environment. GTL implemented through dimensions such as inspirational motivation and idealized influence can foster collective awareness that drives structured and sustainable environmentally friendly behavior within academic institutions. Theoretically, these results are consistent with the Transformational Leadership theory proposed by Bass and Avolio (1994), which emphasizes that transformational leaders are able to inspire organizational members to transcend personal interests for the sake of achieving common goals, including environmental goals. In this context, leaders who have a vision of sustainability, are able to instill green values, and demonstrate exemplary behavior, contribute directly to improving energy efficiency, reducing waste, and complying with campus environmental standards. Additionally, these findings align with Elkington's (1997) Triple Bottom Line concept, which states that organizational success is measured not only by financial aspects but also by contributions to the environment and society. These findings also reinforce previous research. Perez et al. (2023) in a study on the SME sector showed that GTL significantly influences environmental performance improvement through leaders' motivation and example in promoting green practices. Furthermore, Nilam et al. (2024) in the context of educational institutions found that GTL has a direct influence on Environmental Performance, although green innovation does not act as a mediator. These studies confirm that the motivational and inspirational dimensions of GTL are key elements in shaping sustainability-oriented organizational behavior. Therefore, the results of this study reinforce the argument that strengthening the role of green leadership is crucial in driving optimal environmental performance in higher education institutions.

Environmental Knowledge Sharing memediasi pengaruh Green Transformational Leadership terhadap Environmental Performance

The results indicate that Environmental Knowledge Sharing significantly mediates the influence of Green Transformational Leadership on Environmental Performance, with a path coefficient value of 0.273 and a p-value of 0.000, which is less than the significance level of 5% (α = 0.05). This finding indicates that visionary and inspirational leadership in an environmental context not only directly influences environmental performance but also indirectly through increased environmental knowledge sharing activities among organizational members. In the context of higher education, leaders who can foster a spirit of sustainability will cultivate a collaborative culture where students and academic staff share information, experiences, and strategies relevant to environmentally friendly practices, thereby promoting more effective EP. Theoretically, these results align with Transformational Leadership Theory, which explains that transformational leaders create psychological influence through motivation and inspiration, which then drives positive behavior within the organization, including in the form of knowledge exchange (Bass & Avolio, 1994). Additionally, the Knowledge-Based View approach positions knowledge as a strategic asset that, when systematically shared, creates a competitive advantage, including in organizational sustainability efforts. In this context, EKS acts as a channel that transforms leadership vision and values into collective practices, directly contributing to better environmental management through enhanced individual and group capacity to understand and implement green practices.

These findings are supported by previous research. Qasim et al. (2024) show that transformational leadership plays a crucial role in facilitating environmental learning and pro-environmental behavior through the mediating role of knowledge sharing and green self-efficacy. Additionally, Papagiannakis and Lioukas (2020) state that Environmental Knowledge Sharing plays a crucial role in strengthening the relationship between green leadership and organizational environmental performance. Although Malik et al. (2024) found that EKS does not have a direct influence on EP, their study still affirms that EKS strengthens the effectiveness of green strategies within organizations. Therefore, the results of this study reinforce the literature that the success of green leadership in improving environmental performance is highly dependent on the creation of an active and sustainable knowledge-sharing system within the organizational environment.

Green Organizational Culture memediasi pengaruh Green Transformational Leadership terhadap Environmental Performance

The test results show that Green Organizational Culture (GOC) significantly mediates the influence of Green Transformational Leadership (GTL) on Environmental Performance (EP), with a path coefficient value of 0.243 and a p-value of 0.000, which is less than the significance threshold of 5% ($\alpha = 0.05$). This finding indicates that GTL not only has a direct impact on environmental performance but also strengthens EP through the formation of an organizational culture that supports sustainability values. Leaders who internalize green values in their vision and daily behavior will encourage organizations to establish norms, habits, and symbolic systems that prioritize environmental conservation as a collective priority, rather than merely individual initiatives. From a theoretical perspective, these results reinforce Schein's (2010) Organizational Culture Theory, which states that leadership is the primary source in the formation of organizational culture. When leaders instill sustainability values into the organizational structure through modeling and policies, a green culture will be systematically formed and maintained in the organization's daily practices. Bass and Avolio's (1994) Transformational Leadership Theory also supports this by emphasizing that transformational leaders not only influence individuals directly but also shape collective value systems through habits, symbols, and routines that support long-term change. Thus, GOC serves as a cultural channel that transforms green leadership values into collective commitment and behavior toward sustainability. This finding is also consistent with previous research. Fatoki et al. (2021) found that green organizational culture significantly strengthens the influence of leadership on environmental performance, making culture the primary determinant of the success of organizational green policies. Purwanto et al. (2024) also demonstrated that green-oriented leadership contributes to the formation of an organizational culture that effectively supports sustainability programs. However, they also emphasize the importance of additional strategic approaches to maximize the impact. Thus, the results of this study confirm that to achieve sustainable environmental performance, institutions not only need visionary leaders but also a strong organizational culture system that is internalized throughout all levels of the organization.

CONCLUSION

Based on the results of data analysis and discussion, it can be concluded that:

1. Green Transformational Leadership contributes to Environmental Performance. Leaders who are able to inspire and motivate members of the organization to behave in an environmentally friendly manner are able to increase environmental awareness and performance on campus.
2. Environmental Knowledge Sharing acts as a mediator in the relationship between Green Transformational Leadership and Environmental Performance. Effective environmental knowledge sharing among the academic community encourages a stronger understanding and concrete action toward environmental sustainability.
3. Green Organizational Culture also mediates the influence of Green Transformational Leadership on Environmental Performance. A green organizational culture reinforces pro-environmental norms, values, and habits that are embedded in the daily behavior of students and university staff.

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