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# Embedding Local Wisdom Through Green Transformational Leadership Education for Sustainable Performance

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**ABSTRACT**

**Objective:** This study aims to examine the effect of green transformational leadership education grounded in local wisdom on sustainable performance, with green behavior positioned as a mediating variable among employees at PT Indonesia Morowali Industrial Park (IMIP). **Method:** An explanatory quantitative research design was employed using Partial Least Squares–Structural Equation Modeling (PLS-SEM). The sample consisted of 100 employees, determined based on the ten-times rule relative to the number of measurement indicators. Data were collected through structured online questionnaires and field observations. The measurement model was evaluated using convergent validity, discriminant validity, and reliability testing, while the structural model was assessed through path coefficients, $R^2$, $Q^2$, and hypothesis testing using bootstrapping procedures. **Results:** The findings indicate that green transformational leadership education based on local wisdom has a positive and significant direct effect on sustainable performance ($\beta = 0.519$; $T = 7.433$; $p < 0.001$) and on green behavior ($\beta = 0.661$; $T = 11.749$; $p < 0.001$). Green behavior also significantly influences sustainable performance ($\beta = 0.359$; $T = 4.613$; $p < 0.001$). Furthermore, green behavior partially mediates the relationship between green transformational leadership education and sustainable performance ($\beta = 0.238$; $T = 4.195$; $p < 0.001$). The model explains 64.5% of the variance in sustainable performance and demonstrates strong predictive relevance ($Q^2 = 0.80$). **Novelty:** This study offers empirical evidence on the behavioral mechanism through which green transformational leadership education embedded in local wisdom enhances sustainable performance. Distinct from existing literature that applies Western-centric frameworks, this research demonstrates that integrating indigenous values such as metapoko-pokofali and mefalo-falo into leadership education strengthens the internalization of pro-environmental behavior. By positioning green behavior as a partial mediating construct, the research provides a contextualized model for strengthening long-term organizational performance in resource-intensive industrial settings.

## INTRODUCTION

Morowali Regency, situated in Central Sulawesi Province, has undergone remarkable economic growth over the past decade, primarily driven by the rapid expansion of the nickel mining sector and the rise of metal-based manufacturing industries. This development has significantly increased regional income and contributed meaningfully to Indonesia's national economy. However, alongside these economic gains, industrialization has also brought mounting environmental and social pressures. In addition to concerns over ecological degradation, such as deforestation, water pollution, land degradation, and a decline in public health, Morowali now faces

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increasingly complex human resource challenges, particularly in ensuring equitable access to opportunities for local communities amid the influx of external labor and shifting socioeconomic structures. These conditions call for more than regulatory and technological responses; they demand transformative leadership education and practices that integrates sustainability values into organizational behavior, workforce development, and the broader governance of industrial operations (Armawati et al., 2024; Nasution et al., 2024).

PT. Indonesia Morowali Industrial Park (IMIP), located in Morowali Regency, is one of the largest nickel industrial areas in Indonesia, contributing significantly to national economic growth through mining and metal manufacturing activities (Arl & Rahayu, 2025). However, behind this growth lies serious problems related to environmental damage and social impacts that have not been addressed systematically. Foundation (2025) reported that tailings waste in the PT. IMIP area contains toxic compounds such as sulfuric acid and hexavalent chromium, which threaten public health and the sustainability of coastal ecosystems. Furthermore, monitoring by the Central Sulawesi Provincial Environmental Agency shows a significant increase in water pollution levels around the PT. IMIP industrial area, which has resulted in a decline in the quality of water sources for residents. Health data from the Morowali Regency Health Agency in 2025 also recorded an increase in cases of respiratory disorders and skin diseases suspected to be related to exposure to industrial pollutants (News, 2025). A study by Oetomo et al., (2025) stated that without sustainable practices, the carbon footprint of industrial areas will continue to increase.

A report issued by the Ministry of Environment and Forestry in 2025 revealed several environmental violations committed by PT. Indonesia Morowali Industrial Park (IMIP), including the clearing of approximately 1,800 hectares of land not covered by the approved Environmental Impact Analysis (AMDAL) document and the construction of industrial facilities beyond the scope of existing permits. These findings underscore the tension between rapid industrial development and regulatory compliance, highlighting the urgent need for stronger environmental governance and leadership accountability within the industrial sector (Reuters, 2025). This issue underscores the persistent gap between economic growth and environmental governance, emphasizing the need for a leadership model capable of reconciling both. One relevant approach is green transformational leadership (GTL), which extends beyond the pursuit of organizational outcomes to foster the internalization of sustainability-oriented values. In the context of Morowali Regency, local wisdom has long played a vital role in guiding communities toward the sustainable management of natural resources. Integrating these local wisdom values into green leadership education to employees can enhance the effectiveness of sustainability initiatives by harmonizing economic development, environmental preservation, and cultural integrity. The adoption of green transformational leadership practices grounded in local wisdom thus represents a strategic response to this challenge, inspiring and motivating employees' green behavior and, in turn, strengthening sustainable organizational performance (Sanusi et al., 2023; Satriadi et al., 2025).

The local culture of Morowali Regency embodies rich environmental wisdom reflected in traditional values such as metapoko-pokofali or metatulungi, forms of selfless mutual cooperation expressed through material and spiritual support, such as mefalo-falo or moala'oleo, which emphasize cooperation based on shared interests, and the tradition of community service. These cultural principles nurture a spirit of collective

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responsibility and cooperation in maintaining ecological balance. Within the industrial context of PT. IMIP, these values can strengthen employees' green behavior, motivating them to consistently engage in environmentally responsible practices that support sustainable organizational performance (Izma et al., 2025). Satriadi et al., (2025) emphasize that leadership that focuses on environmental sustainability values can inspire and empower employees to actively contribute to environmental conservation. The synergy between GTLE and local culture is the main key in strengthening employee green behavior and commitment to environmental sustainability. The incorporation of local values ensures that environmental leadership education is not merely a managerial directive derived from global sustainability frameworks, but a culturally grounded learning process that resonates with employees' lived experiences. By rooting leadership practices in regional wisdom, IMIP strengthens the moral foundation of green leadership and enhances employees' sense of responsibility toward the environment and the local community.

Based on field observations, PT. Indonesia Morowali Industrial Park (IMIP) faces several challenges in implementing green transformational leadership to employees. The most pressing issue lies in the imbalance between intensive natural resource exploitation and the responsibility to uphold environmental sustainability. Moreover, the participation of local communities in decision-making processes remains limited, despite their crucial role in supporting long-term ecological stewardship. At the operational level, the enforcement of environmental regulations and standards has not been fully optimized, while high production pressures often drive the company to prioritize short-term economic gains over sustainable development strategies. In addition, efforts to foster employees' green behavior encounter significant barriers. Many employees at PT. IMIP have yet to fully comprehend the company's sustainability policies, resulting in limited engagement and initiative in implementing green practices. These challenges highlight the need for a leadership approach that not only emphasizes regulatory compliance but also inspires internal motivation, ethical commitment, and collective participation in advancing sustainability across all levels of the organization.

The concept of Green Transformational Leadership Education (GTLE) at the Indonesia Morowali Industrial Park (IMIP) represents a systematic organizational approach to developing leaders capable of driving sustainability through inspiration, behavioral modeling, and cultural alignment. GTLE is built upon the core principles of transformational leadership: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration, reframed within an environmental stewardship context. Its primary intent is to cultivate employees who can internalize and champion green values, thereby strengthening sustainable performance across operational levels. Green transformational leadership education to employees is essential in responding to the negative impacts of industrial expansion on the environment, including deforestation, water pollution, and increased industrial waste volume (Khan et al., 2025). A study by You et al., (2025) emphasize that employee behavior oriented towards environmental sustainability can make a significant contribution to maintaining ecosystem balance while strengthening the organization's sustainability performance. In this context, green transformational leadership education that integrates local wisdom values is considered a strategic approach to enhancing sustainable performance by providing inspiration, articulating a clear vision of sustainability, and fostering green innovation. Empirical studies have shown that green leadership models not only

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strengthen employees' green behavior but also stimulate green creativity and contribute to improved long-term sustainability performance (Ding, 2023; Gunay, 2025; Khan et al., 2025).

Based on the problem description, this study develops the following main research questions: 1) How does green transformational leadership education and practices grounded in local wisdom affect sustainable performance? 2) In what ways does green transformational leadership education and practices inspired by local wisdom impact green behavior? 3) How does green behavior influence sustainable performance? 4) How does green transformational leadership education based on local wisdom affect sustainable performance through the mediating effect of green behavior? The aim of this research is to investigate how green transformational leadership education, rooted in local wisdom values, contributes to enhancing employees' green behavior and strengthening the organization's sustainable performance.

## LITERATURE REVIEW

### Transformational Leadership Theory

The Transformational Leadership Theory, first introduced by Bass (1985) and later refined by Bass and Avolio (1994), describes how leaders motivate, inspire, and guide their followers to reach higher performance levels by aligning personal objectives with the organization's core values. The theory is built upon four key components: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. These dimensions not only foster emotional commitment but also stimulate behavioral change among employees by encouraging them to transcend their self-interests for the sake of collective goals. Idealized influence refers to leaders acting as role models who earn respect and trust through ethical behavior and vision; inspirational motivation involves articulating a compelling vision that energizes and unites followers; intellectual stimulation challenges employees to question assumptions, think creatively, and embrace innovation; while individualized consideration attends to employees' unique needs and promotes personal development.

Building upon this framework, Green Transformational Leadership (GTL) emerges as an environmentally oriented extension that applies the same foundational dimensions to promote sustainability within organizations. In this context, transformational leaders integrate environmental values into their leadership practices by modeling eco-friendly behavior, inspiring a shared vision for sustainability, encouraging innovative environmental solutions, and supporting employees in their individual contributions to green initiatives. GTL thus represents a strategic leadership style that not only drives organizational performance but also cultivates pro-environmental behavior as part of the broader sustainability agenda (Fatoki, 2023).

### Theory of Planned Behavior

Theory of Planned Behavior, introduced by Ajzen (1991), provides a comprehensive model for explaining human behavior through three primary determinants: attitudes toward the behavior, subjective norms, and perceived behavioral control. Together, these factors influence an individual's behavioral intentions, which subsequently determine actual behavior. TPB has been extensively utilized to interpret various types of pro-environmental actions, such as waste reduction, energy saving, and green innovation. In an organizational setting, employees are more inclined to demonstrate green behavior

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when they perceive it as personally meaningful (attitude), socially supported (subjective norm), and within their ability to perform (perceived behavioral control).

This theoretical perspective is highly relevant in explaining the development of employees' green behavior, as it emphasizes the psychological and social determinants that motivate pro-environmental actions at the individual level. When organizational factors such as supportive leadership, a sustainability-oriented culture, and clearly defined environmental objectives strengthen the three core components of the TPB (attitude, subjective norm, and perceived behavioral control), employees are more likely to internalize sustainable values and express them through everyday green practices. Thus, the TPB serves as a robust framework for understanding how cognitive and normative influences shape consistent and deliberate green behavior within organizational contexts (Sabri et al., 2022).

**Green Transformational Leadership**

Environmental sustainability has become a critical concern for organizations seeking to align economic growth with ecological responsibility. Leadership plays a pivotal role in driving this alignment by influencing organizational values, behavior, and strategic direction. One relevant leadership framework in this context is Green Transformational Leadership (GTL), which integrates environmental values into transformational leadership practices. GTL focuses on shaping employee attitudes and behaviors toward sustainability through inspiration, innovation, and individualized support. Du & Yan (2022) conceptualize GTL as a leadership style that promotes green initiatives within organizations, while Khan et al., (2025) provide empirical evidence showing that leaders with a green orientation significantly enhance employees' pro-environmental behavior by motivating them to prioritize environmental concerns in their work.

The operationalization of GTL is typically reflected through four interrelated indicators. First, idealized influence, where leaders exemplify eco-friendly behavior and act as moral role models. Second, inspirational motivation, which involves articulating a compelling environmental vision to inspire collective engagement. Third, intellectual stimulation, whereby leaders encourage innovative thinking and critical reflection on environmental issues. Fourth, individualized consideration, which emphasizes personalized support and development of employees in achieving sustainability goals. These dimensions not only foster a pro-environmental organizational culture but also enhance individual commitment to green performance (Hosna et al., 2021). Accordingly, GTL offers a robust conceptual and empirical foundation for understanding how leadership can effectively drive sustainability-oriented change within organizational systems.

**Green Behavior**

Green behavior plays a vital role in supporting organizational sustainability by translating environmental values into concrete individual actions within the workplace. As organizations face increasing demands to reduce their ecological footprint, the proactive involvement of employees in environmentally responsible practices becomes a key component of successful green transformation. This behavior is conceptualized as the manifestation of ecological awareness and intentional efforts by individuals to minimize negative environmental impact, including reducing waste, conserving energy, and contributing to green innovation (Lisbet et al., 2024).

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According to Islam et al., (2021) green behavior indicators include three indicators. The first is green workplace behavior, which encompasses voluntary practices performed in the work environment that support environmental protection and sustainability goals. The second is green in-role behavior, referring to pro-environmental actions that are explicitly embedded within an employee's official job responsibilities. The third is green innovative behavior, which reflects an individual's capacity to initiate, propose, or implement novel ideas and practices aimed at enhancing environmental performance within the organization. These indicators capture both the routine and creative aspects of employee engagement in environmental initiatives, thereby providing a comprehensive framework for measuring individual contributions to organizational sustainability.

**Sustainable Performance**

Sustainable performance represents a strategic orientation that enables organizations to balance economic objectives with environmental and social responsibilities. Promoting this form of performance contributes not only to operational efficiency but also to the enhancement of corporate reputation through socially and ecologically responsible practices. The growing integration of sustainability into organizational strategy has brought greater attention to the role of individual employees in realizing these goals through their daily behaviors and decision-making processes (Ali et al., 2024; Nusraningrum et al., 2024).

Individual-level sustainable performance can be understood through three primary indicators that reflect practical contributions to sustainability outcomes. The first is economic performance, which pertains to the efficient and effective use of organizational resources in completing job-related tasks. The second is environmental performance, characterized by actions that support energy conservation, waste reduction, and the creation of a clean and pollution-free work environment. The third is social performance, which includes ethical behavior, the cultivation of harmonious interpersonal relationships, and efforts to enhance collective well-being at work. These three dimensions provide a comprehensive framework for assessing how individuals translate sustainability values into concrete, measurable contributions within organizational settings (Alboliteeh et al., 2022).

**Hypotesis Development**

**H1: Green Transformational Leadership Education Based on Local Wisdom Has a Significant Influence on Sustainable Performance**

Green Transformational Leadership (GTL) education encourages pro-environmental behavior by fostering a strong commitment to sustainability, motivating employees to prioritize eco-friendly practices, and creating an organizational climate that values environmental responsibility. Leaders who adopt this approach inspire employees to actively engage in behaviors that support the organization's green objectives (Hosna et al., 2021). According to Du & Yan (2022), leaders with a green orientation play a critical role in fostering environmental awareness, encouraging long-term thinking among employees, and driving innovative solutions to ecological issues. The causal mechanism lies in how GTL shapes employees' values and mindsets leaders serve as role models who demonstrate environmental responsibility, intellectually stimulate employees to find creative green solutions, and provide individualized support that reinforces pro-environmental norms. When these leadership practices are internalized by employees, they translate into sustainable behaviors that improve organizational performance.

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Moreover, when GTL values are integrated with local cultural principles that align with sustainability, this alignment strengthens employees' emotional connection and commitment to environmental goals, further enhancing sustainable performance (Khan et al., 2025). Consequently, green transformational leadership rooted in local wisdom is expected to enhance sustainable performance by cultivating an adaptive, innovative, and sustainability-oriented organizational culture. Educating employees of this practices will contribute significant impacts on corporate's practices.

**H2: Green Transformational Leadership Based on Local Wisdom Has a Significant Influence on Green Behavior**

Environmentally oriented leaders rooted in local values not only set the direction for sustainability but also create a psychological climate that motivates employees to engage in pro-environmental behaviors voluntarily. Through charismatic influence, inspirational motivation, and intellectual stimulation, leaders shape employees' attitudes and cognitive frameworks toward environmental issues (Hosna et al., 2021; Du & Yan, 2022). By modeling green behavior and supporting creative ecological initiatives, they enhance employees' sense of environmental responsibility and self-efficacy, encouraging the internalization of sustainability values and consistent pro-environmental actions. When this leadership approach is integrated with local wisdom such as respect for nature, harmony, and collective responsibility it deepens employees' moral and emotional commitment to environmental goals. Consequently, local cultural values function as ethical anchors that strengthen and sustain green behaviors, transforming them from externally imposed obligations into intrinsically motivated and enduring practices.

**H3: Green Behavior Significantly Has a Significant Influence Sustainable Performance**

Green behavior reflects an individual's awareness and commitment to act in environmentally friendly ways within the workplace, both through compliance with organizational policies and through personal initiatives that support sustainability Islam et al., 2021). When green values are internalized, they influence employees' cognition and motivation, leading them to perceive environmental responsibility as part of their personal identity and encouraging consistent pro-environmental actions. These behaviors go beyond routine operational practices such as energy conservation or waste management, encompassing innovative efforts that enhance environmental performance. The internalization of green values also strengthens employees' sense of ownership and intrinsic motivation, resulting in socially, ecologically, and productively responsible conduct. Consequently, a strong orientation toward green behavior promotes sustainable performance by improving resource efficiency, fostering a healthy and collaborative work environment, and reinforcing positive social relationships within the organization (Ali et al., 2024; Farmanesh et al., 2023).

**H4: Green Transformational Leadership Based on Local Wisdom Has a Supported Influence on Sustainable Performance Through Green Behavior**

Environmentally oriented transformational leadership fosters the emergence of green behavior through role modeling, innovative encouragement, and a strong concern for sustainability values (Hosna et al., 2021). By demonstrating environmentally responsible actions and encouraging creative ecological initiatives, leaders shape employees'

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environmental awareness and motivate them to internalize sustainability values. When this leadership approach is aligned with local wisdom such as collectivism, harmony with nature, and social responsibility it reinforces employees' moral and emotional connection to environmental goals, thereby deepening their commitment to act sustainably. As a result, employees develop green behaviors that manifest in conscious actions supporting environmental preservation, both through formal work activities and personal initiatives (Islam et al., 2021). These behaviors, in turn, enhance sustainable performance by improving resource efficiency, maintaining a healthy work environment, and nurturing a culture of sustainability (Farmanesh et al., 2023). Therefore, green behavior serves as a mediating mechanism that bridges the influence of local wisdom based green transformational leadership on the success of long-term organizational performance.

## RESEARCH METHOD

This research adopts an explanatory quantitative design approach to explore the causal relationships among the studied variables. The main objective is to investigate how green transformational leadership education, rooted in local wisdom values, influences green behavior and, in turn, affects sustainable performance. Quantitative techniques are applied to systematically gather and statistically analyze data, allowing for the assessment of both direct and indirect effects through the mediating function of green behavior. This methodological approach offers a holistic understanding of the causal processes that drive improvements in sustainable performance within the context of green transformational leadership based on local wisdom (Sahir, 2022).

The research was conducted at PT. IMIP, located in Bahodopi District, Morowali Regency, Central Sulawesi Province. The company operates in the nickel mining and processing industry and is recognized as one of the largest industrial estates in Indonesia. This location was deliberately chosen because PT. IMIP has demonstrated a strong commitment to sustainability through the implementation of integrated environmental management systems, waste reduction programs, and energy efficiency initiatives, making it highly relevant to the study's focus on sustainable organizational practices. In addition, PT. IMIP's active integration of local wisdom values such as harmony with nature, community collaboration, and social responsibility into its organizational culture provides a meaningful context for analyzing how green transformational leadership rooted in local values influences employee behavior and sustainable performance. Thus, the company represents an ideal setting for investigating the intersection of sustainability practices and local cultural wisdom within an industrial context.

The data in this study was obtained through observation and online questionnaires distributed to PT. IMIP employees using Google Forms. The population for this study comprised all 85,423 PT. IMIP employees. The study employed a non-probability sampling technique, specifically using the convenience sampling method. The convenience sampling method was chosen because the questionnaires were distributed online via a Google Form link, so the respondents who participated in this study were employees who had internet access, free time, and a greater willingness to fill out the research questionnaire (Auliya et al., 2020).

The sample size in this study was determined following Hair et al., (2021), who recommend using a multiplier of 10 times the number of indicators for Structural Equation Modeling (SEM). Since this study has 10 indicators, the sample size was

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calculated as 10 indicators × 10 = 100 respondents. This approach ensures sufficient data points to achieve reliable and valid SEM results and provides adequate statistical power to detect significant relationships within the model.

This study utilizes quantitative data obtained from questionnaires distributed to PT. IMIP employees. The data sources used are divided into two types, namely primary data and secondary data. Primary data was collected directly through observation and questionnaires from respondents, while secondary data was taken from various literature such as journals, books, and other sources related to the topic and variables studied (Priadana & Sunarsi, 2021). A closed questionnaire was used as the research instrument, which was compiled based on indicators for each variable. Respondents provided assessments using a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), to measure the level of agreement with statements related to the research variables (Sahir, 2022).

The data in this study were analyzed using Structural Equation Modeling (SEM) based on Partial Least Squares (PLS), with SmartPLS version 4 serving as the analytical tool. PLS-SEM was deemed suitable for this research because it can accommodate complex models involving multiple latent constructs, as well as testing both direct and indirect effects, particularly when the goal is to examine predictive relationships rather than confirm established theory. Compared to covariance-based SEM, PLS-SEM offers greater flexibility with small to medium sample sizes and does not require strict assumptions regarding data normality, which aligns well with the sample and data characteristics of this study. Moreover, PLS-SEM is highly effective in modeling both formative and reflective constructs, making it well-suited for analyzing the relationships among green transformational leadership based in local wisdom (GTL), green behavior (GB), and sustainable performance (SP). The analysis process includes evaluating the outer model to confirm the validity and reliability of indicators representing the latent constructs, followed by examining the inner model to assess the strength and significance of the hypothesized relationships within the framework (Hair et al., 2021).

## RESULTS AND DISCUSSION

### *Results*

#### Outer Model Analysis

#### *Convergent Validity*

Convergent validity in reflective indicators in PLS is assessed based on outer loadings. An indicator is considered valid if its outer loading is above 0.70. If the outer loadings value is < 0.70, the indicator is excluded from the measurement model. The following are the outer loadings values:

**Table 1.** Outer Loadings

| Dimensions | GTL on Local Wisdom Basis | Green Behavior | Sustainable Performance |
|---|---|---|---|
| GTL.1 | 0.924 | | |
| GTL.2 | 0.896 | | |
| GTL.3 | 0.903 | | |
| GTL.4 | 0.879 | | |
| GTL.5 | 0.904 | | |
| GTL.6 | 0.921 | | |
| GTL.7 | 0.898 | | |
| GTL.8 | 0.919 | | |

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| Dimensions | GTL on Local Wisdom Basis | Green Behavior | Sustainable Performance |
|---|---|---|---|
| GTL.9 | 0.900 | | |
| GTL.10 | 0.910 | | |
| GTL.11 | 0.913 | | |
| GTL.12 | 0.900 | | |
| GTL.13 | 0.906 | | |
| GTL.14 | 0.915 | | |
| GTL.15 | 0.922 | | |
| GTL.16 | 0.924 | | |
| GTL.17 | 0.913 | | |
| GTL.18 | 0.920 | | |
| GTL.19 | 0.925 | | |
| GTL.20 | 0.884 | | |
| GTL.21 | 0.926 | | |
| GB.1 | | 0.894 | |
| GB.2 | | 0.791 | |
| GB.3 | | 0.911 | |
| GB.4 | | 0.890 | |
| GB.5 | | 0.833 | |
| GB.6 | | 0.884 | |
| GB.7 | | 0.898 | |
| GB.8 | | 0.912 | |
| GB.9 | | 0.884 | |
| GB.10 | | 0.872 | |
| GB.11 | | 0.858 | |
| GB.12 | | 0.860 | |
| GB.13 | | 0.903 | |
| GB.14 | | 0.884 | |
| SP.1 | | | 0.936 |
| SP.2 | | | 0.918 |
| SP.3 | | | 0.906 |
| SP.4 | | | 0.911 |
| SP.5 | | | 0.878 |
| SP.6 | | | 0.926 |
| SP.7 | | | 0.915 |
| SP.8 | | | 0.902 |
| SP.9 | | | 0.916 |
| SP.10 | | | 0.902 |
| SP.11 | | | 0.903 |
| SP.12 | | | 0.890 |

*Source: Primary Data by SmartPLS Versi 4 (2025)

Based on the table above, it can be seen that each indicator in the variable has an outer loading value of more than 0.70, so it can be said to be valid. Thus, all indicators can be used to measure variables and proceed to the next stage of analysis. The indicators in the green transformational leadership variable based on local wisdom have been proven to represent leadership indicators associated with local values. Similarly, the indicators in the green behavior and sustainable performance variables show that employee green behavior and perceptions of sustainable performance can be measured validly using the research instrument used.

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**Discriminant Validity**

The purpose of assessing discriminant validity in this study is to confirm that each construct is distinct and does not overlap with others. In this research, discriminant validity is evaluated using the Fornell-Larcker criterion, as presented below:

**Table 2. .** Fornell Larcker Criterion

| Variables | GTL on Local Wisdom Basis | Green Behavior | Sustainable Performance |
|---|---|---|---|
| GTL on Local Wisdom Basis | 0.910 | | |
| Green Behavior | 0.661 | 0.887 | |
| Sustainable Performance | 0.757 | 0.703 | 0.909 |

**Source: Primary Data by SmartPLS Versi 4 (2025)*

Based on the table above, each indicator demonstrates the highest loading factor value on its corresponding latent construct compared to other constructs. This finding indicates that the indicators effectively represent their respective constructs, confirming that the criteria for discriminant validity are met. Therefore, all latent constructs in this study satisfy the requirements for discriminant validity.

**Reliability Test**

The reliability test in this study aims to confirm that the research variables demonstrate adequate internal consistency. The reliability of the latent constructs was evaluated using minimum thresholds of 0.70 for composite reliability, 0.60 for Cronbach's Alpha, and 0.50 for the Average Variance Extracted. The results of the construct reliability and validity analysis are presented in the following table.

**Table 3.** Construct Reliability and Validity

| Variables | Cronbach's Alpha | Composite Reliability | Average Variance Extracted |
|---|---|---|---|
| GTL on Local Wisdom Basis | 0.990 | 0.990 | 0.828 |
| Green Behavior | 0.977 | 0.978 | 0.770 |
| Sustainable Performance | 0.981 | 0.981 | 0.826 |

**Source: Primary Data by SmartPLS Versi 4 (2025)*

Based on Table 3, all research variables have Cronbach's alpha values greater than 0.60 and composite reliability scores above 0.70, indicating that they satisfy the reliability requirements. Additionally, the Average Variance Extracted (AVE) for each variable exceeds the 0.50 benchmark, demonstrating that the constructs possess adequate convergent validity. Based on these results, it can be concluded that all variables in this study meet the necessary criteria and can be considered both valid and reliable measures.

***Inner Model Analysis***

**R-square**

R-square evaluates how well the independent variables explain the changes in the mediating variables and dependent variables in this study.

**Table 4.** R-square Value

| Variables | R-square |
|---|---|
| Green Behavior | 0.437 |
| Sustainable Performance | 0.645 |

**Source: Primary Data by SmartPLS Versi 4 (2025)*

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The table above shows an R-square value for the green behavior (M) of 0.437, which means that the local wisdom-based green transformational leadership variable (X) explains 43.7% of this green behavior, while the remaining 56.3% is influenced by factors outside the research model. Meanwhile, the R-square value for the sustainable performance variable (Y) is 0.645, indicating that variables X and M together explain 64.5% of sustainable performance, with the remaining 35.5% explained by other constructs not included in this model.

The goodness of fit of the model in this study was assessed using the $Q^2$ value. This value serves a similar purpose to the coefficient of determination ($R^2$), where a value closer to 1 signifies a stronger level of model fit with the observed data. The outcomes of the $Q^2$ value calculation are presented below:

$$\begin{aligned} \text{Q-square} &= 1 - [(1 - R^2 1) \times (1 - R^2 2)] \\ &= 1 - [(1 - 0.437) \times (1 - 0.645)] \\ &= 1 - (0.563 \times 0.355) \\ &= 1 - 0.20 \\ &= 0.80 \end{aligned}$$

*The $Q^2$ value of 0.80 demonstrates that the research model is able to account for 80% of the variance in the observed data, with the remaining 20% explained by factors outside the model. This high level of explained variance suggests that the model possesses a strong degree of goodness of fit with the research data.*

**Hypotesis Testing**

The objective of the hypothesis testing in this study is to verify whether the proposed hypotheses are statistically supported. The evaluation is based on the P-value and T-statistic criteria. A hypothesis is accepted when the P-value is less than 0.05 and the T-statistic is greater than 1.96, whereas it is rejected when the P-value exceeds 0.05 or the T-statistic falls below 1.96. The results of the hypothesis testing conducted in this study are summarized in the table below:

**Table 5.** Results of Testing the Direct and Indirect Effects Between Variables

| Relationships Between Constructs | Original Sample (O) | T Statistics (O/STDEV) | P values | Status |
|---|---|---|---|---|
| X → Y | 0.519 | 7.433 | 0.000 | Significant |
| X → M | 0.661 | 11.749 | 0.000 | Significant |
| M → Y | 0.359 | 4.613 | 0.000 | Significant |
| X → M → Y | 0.238 | 4.195 | 0.000 | Supported |

**Source: Primary Data by SmartPLS Versi 4 (2025)*

Based on Table 5 above, it shows that all direct and indirect relationships between the four constructs have a strong level of significance. Based on the four most dominant construct relationships, the second hypothesis, namely green transformational leadership based on local wisdom, has the strongest influence on green behavior because it has the largest T statistics value of 11.749. The explanation of the hypothesis testing results is as follows:

**Hyphotesis 1: Green Transformational Leadership Based on Local Wisdom Has a Significant Influence on Sustainable Performance**

This hypothesis examines the influence of green transformational leadership grounded in local wisdom (X) on sustainable performance (Y). The analysis results show a P-value of 0.000 and a T-statistic of 7.433, where the P-value is below 0.05 and the T-statistic

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exceeds 1.96. These findings confirm that green transformational leadership based on local wisdom significantly affects sustainable performance, indicating strong empirical support for the proposed relationship.

**Hypothesis 2: Green Transformational Leadership Based on Local Wisdom Has a Significant Influence on Green Behavior**

This hypothesis explores the impact of green transformational leadership grounded in local wisdom (X) on green behavior (M). The results reveal a P-value of 0.000 and a T-statistic of 11.749, fulfilling the criteria for statistical significance ($P < 0.05$ and $T > 1.96$). These outcomes demonstrate that leaders who apply green transformational principles rooted in local wisdom can positively influence employees' green behavior, providing clear support for the hypothesized relationship.

**Hypothesis 3: Green Behavior Significantly Has a Significant Influence Sustainable Performance**

This hypothesis investigates the influence of green behavior (M) on sustainable performance (Y). The analysis reports a P-value of 0.000 and a T-statistic of 4.613, both indicating statistical significance. The results suggest that green behavior contributes meaningfully to enhancing sustainable performance within organizations, validating the proposed relationship between the two constructs.

**Hypothesis 4: Green Transformational Leadership Based on Local Wisdom Has a Supported Influence on Sustainable Performance Through Green Behavior**

This hypothesis tests whether green behavior (M) mediates the relationship between green transformational leadership grounded in local wisdom (X) and sustainable performance (Y). The findings show a P-value of 0.000 and a T-statistic of 4.195, both of which meet the significance threshold. These results indicate that green transformational leadership influences sustainable performance indirectly through green behavior, confirming the mediating role proposed in this study.

## *Discussion*

**Green Transformational Leadership Education Based on Local Wisdom on Sustainable Performance**

Research findings indicate that green transformational leadership based on local wisdom has a significant influence on sustainable performance. This shows that when leaders internalize transformational leadership values that are environmentally oriented and aligned with local wisdom, they can encourage the achievement of sustainable employee performance. Local values such as environmental responsibility, harmony with nature, and a collective spirit that is alive in the local culture provide moral and social strength that reinforces the effectiveness of environmentally oriented transformational leadership styles. When leadership is carried out with a contextual approach rooted in local culture, the process of transformation towards sustainability becomes more easily accepted and implemented by all employees.

Green leadership practices at PT. Indonesia Morowali Industrial Park (IMIP) are deeply rooted in local wisdom, which significantly strengthens their implementation and impact. Educational approach operates through a combination of formal training, embedded environmental practices, reflective learning, and participatory initiatives. Employees are encouraged to connect transformational leadership behaviors, such as

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motivating others toward a shared vision, innovating for environmental improvement, and modeling ethical conduct with the local philosophy of harmonious coexistence with nature. This connection reinforces the belief that sustainability is both a professional obligation and a cultural identity.Division leaders actively incorporate indigenous values such as communal deliberation, mutual cooperation, and respect for traditional customs into their leadership approaches. This cultural integration fosters authentic engagement and trust among employees and local communities, making environmental initiatives more meaningful and sustainable. For example, reforestation programs are not only corporate-driven but are collaboratively developed with community leaders, communicated through language and practices that emphasize family bonds and collective responsibility core aspects of Morowali's local culture. This alignment of Green Transformational Leadership with local wisdom enables PT IMIP to create an inclusive, adaptive, and culturally sensitive environmental stewardship model that enhances employee motivation, organizational legitimacy, and sustainable performance over the long term.

These results align with the conclusions drawn by Du & Yan (2022), who emphasize that key dimensions of green leadership, such as idealized influence, inspirational motivation, and intellectual stimulation play a crucial role in shaping collective environmental awareness and driving organizations toward ecological transformation. Similarly, Weber & Kassab (2024) highlight that leaders who integrate sustainability practices with local cultural values tend to build stronger trust and garner greater support from both employees and surrounding communities, which in turn facilitates more effective implementation of sustainability initiatives. Furthermore, Aulia & Nawangsari (2023) demonstrate that organizations that embed local cultural contexts within their leadership approaches achieve more optimal outcomes in meeting sustainability targets. Collectively, these findings underline that Green Transformational Leadership, especially when rooted in local wisdom, fosters a culture of environmental responsibility, enhances employee engagement in pro-environmental behaviors, and mobilizes community support factors that directly contribute to improved sustainable performance in organizations. Ultimately, the concept of Green Transformational Leadership Education at IMIP highlights the synergy between global sustainability leadership principles and local cultural wisdom. By aligning green leadership development with local values, IMIP cultivates a workforce capable of advancing sustainable performance in ways that are technically effective, culturally meaningful, and socially integrative.

**Green Transformational Leadership Based on Local Wisdom on Green Behavior**

Research findings show that green transformational leadership based on local wisdom has a significant influence on employees' green behavior. Leaders who are able to internalize green values and communicate them in a manner consistent with local culture can encourage environmentally friendly work behavior in the workplace. Local wisdom values such as harmony with nature, social responsibility, and mutual cooperation reinforce the sustainability messages conveyed by leaders, making them easier for employees to accept and implement. Inspirational leadership that is attentive to cultural context not only shapes environmental awareness but also fosters employee commitment to ecological behavior in their daily work lives.

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Practices at PT. IMIP reveal that leaders who integrate local cultural values into their communication strategies create a more impactful and relatable approach to promoting sustainability. By framing environmental initiatives within the context of communal responsibility and cultural norms, leaders effectively foster intrinsic motivation among employees. For example, simple yet meaningful activities such as collective tree planting or maintaining workplace cleanliness resonate deeply because they align with employees' shared sense of belonging and social obligation. This culturally grounded leadership approach reduces resistance and transforms green behavior into voluntary, value-driven actions rather than mere compliance. Consequently, the organizational culture at PT. IMIP becomes more cohesive and proactive in addressing environmental challenges, ultimately strengthening sustainable performance through enhanced employee engagement and ownership.

These results align with the conclusions drawn by Du & Yan (2022) which explains that transformational leaders with green values are able to influence the behavior of their subordinates to be more concerned about the environment and think long-term in building a sustainable organization. Previous research by Bhatti et al., (2023) and Prasetyo et al., (2023) also supports these findings, in which green transformational leadership has been shown to contribute to improved sustainable performance, particularly when applied with a contextual and culturally relevant approach such as through local wisdom. The integration of green leadership styles and local values can create a work culture that encourages sustainable ecological behavior.

**Green Behavior on Sustainable Performance**

Research findings show that green behavior has a significant effect on sustainable performance. Employees who have environmental awareness and behavior tend to show more stable and sustainable performance in the long term. Green behaviors, such as efficient use of resources, maintaining a clean work environment, and adopting environmentally friendly practices, are part of personal responsibility that supports overall productivity and well-being at work. Employees' commitment to environmental sustainability also encourages them to be more disciplined, innovative, and responsible in carrying out their daily tasks.

Employees' green practices at PT. Indonesia Morowali Industrial Park (IMIP) extend beyond formal compliance to become integrated habits that promote both environmental sustainability and operational efficiency. The proactive reduction of electricity and water use, coupled with strict adherence to waste management protocols, reflects a widespread internalization of sustainability values among staff. Notably, several departments have initiated peer-led reminder systems, which serve as continuous reinforcement tools fostering collective accountability and shared commitment to green practices. These grassroots efforts contribute significantly to enhancing individual performance by creating a supportive and health-conscious workplace culture. Moreover, such embedded green behaviors not only improve immediate resource efficiency but also bolster long-term employee motivation, satisfaction, and organizational resilience, thereby reinforcing PT IMIP's overarching sustainable performance goals.

The findings of this study align with the understanding that green behavior reflects an individual's awareness and commitment to act in environmentally friendly ways within the workplace, not only through compliance with organizational policies but also through personal initiatives that support sustainability (Islam et al., 2021). Consistent

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with Lisbet et al., (2024), this behavior originates from intrinsic motivation and genuine care for the environment. When green values are internalized, they shape employees' cognition and motivation, leading them to see environmental responsibility as part of their personal identity and encouraging consistent, proactive pro-environmental actions. These actions extend beyond routine operational practices like energy conservation and waste management to include innovative efforts that improve environmental performance. The internalization process also enhances employees' sense of ownership and intrinsic motivation, fostering socially, ecologically, and productively responsible conduct. As a result, a strong orientation toward green behavior effectively promotes sustainable performance by improving resource efficiency, cultivating a healthy and collaborative work environment, and strengthening positive social relationships within the organization (Ali et al., 2024; Farmanesh et al., 2023).

**Green Transformational Leadership based on Local Wisdom on Sustainable Performance by Green Behavior**

Research findings show that green transformational leadership based on local wisdom has a supported influence on sustainable performance through green behavior. Leaders who integrate local cultural values into their green leadership style are able to encourage environmentally friendly behavior among employees and ultimately improve sustainable performance. These green behaviors, such as energy efficiency, waste reduction, and environmental awareness, contribute directly to improved individual sustainable performance. Commitment to environmental sustainability becomes an integral part of employees' personal responsibilities, which is reflected in concrete actions in the workplace.

Practices at PT. IMIP demonstrate that integrating green transformational leadership with local wisdom creates a tangible impact on employees' green behavior. Leaders consistently reinforce local cultural principles, such as mutual respect, community harmony, and environmental stewardship, in everyday interactions, which fosters a strong collective commitment to sustainability. As a result, employees not only comply with formal environmental policies but also proactively engage in initiatives like resource conservation, pollution reduction, and active participation in sustainability programs. This culturally embedded leadership approach cultivates an intrinsic motivation among employees, transforming green practices into habitual behaviors that enhance overall sustainable performance at both individual and organizational levels. These findings highlight the critical role of culturally aligned leadership in embedding sustainability deeply within corporate culture, driving continuous improvements in environmental outcomes at PT. IMIP.

These results align with the conclusions drawn by Aulia & Nawangsari (2023) which shows that green transformational leadership has a positive effect on employees' green behavior, which in turn improves sustainable performance. Leaders who are able to internalize sustainability values and local wisdom in their leadership style are able to shape more consistent pro-environmental behavior, thereby making a real contribution to the achievement of sustainable performance at both the individual and organizational levels.

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## CONCLUSION

**Fundamental Finding:** This study concludes that education and practices of Green Transformational Leadership grounded in local wisdom exert a positive and significant influence on sustainable performance at PT IMIP. The influence operates both directly and indirectly through the strengthening of employees' green behavior. The structural results indicate that when green leadership education is delivered through structured managerial training, routinized pro environmental workplace practices, and the internalization of Morowali local values such as communal harmony and respect for natural resources, employees' green behavior increases and subsequently enhances the organization's sustainable performance. The findings confirm that green behavior is a central mechanism translating culturally embedded green leadership capability into stronger environmental, social, and economic outcomes, reinforcing the firm's long term competitiveness. **Implications:** This study has several limitations that should be acknowledged. First, the research was conducted exclusively at PT. Indonesia Morowali Industrial Park (IMIP), which may limit the generalizability of the findings to other industrial contexts or geographical regions. Second, the cross-sectional research design does not allow for causal inferences over time, making it difficult to determine the long-term effects of green transformational leadership education on sustainable performance. Third, the reliance on self-reported measures may introduce response bias, as employees might overestimate their green behavior or their perceptions of leadership effectiveness. Fourth, the study focused primarily on quantitative data, which may not fully capture the nuanced ways in which local wisdom is perceived, interpreted, and internalized by employees across different cultural backgrounds. **Further Research:** Future studies should consider several directions to advance this line of inquiry. First, researchers could employ longitudinal designs to examine the sustained effects of green transformational leadership education on green behavior and sustainable performance over extended periods. Second, the inclusion of moderating variables such as employee tenure, job level, educational background, and generational differences would provide deeper insights into the boundary conditions of these relationships. Third, complementary qualitative inquiry through in-depth interviews and focus group discussions could enrich the understanding of how local wisdom values are experienced and enacted in daily workplace practices. Fourth, future research could compare "local wisdom-based" leadership programs with "standard" leadership programs to further isolate the specific impact of the cultural component on green behavior and sustainable performance. Fifth, replication studies in different industrial sectors and geographical locations would help validate the external validity of the current findings. Finally, examining additional mediating variables such as green organizational culture, environmental commitment, and green innovation could provide a more comprehensive understanding of the mechanisms through which green transformational leadership education influences sustainable performance.

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