

THE ROLE OF GREEN LEADERSHIP, GREEN INNOVATION, AND GREEN ORGANIZATIONAL CULTURE ON ORGANIZATIONAL SUSTAINABILITY THROUGH EMPLOYEE GREEN BEHAVIOR: EVIDENCE FROM A MINING COMPANY IN INDONESIA

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Abstract

This study examines the impact of Green Leadership, Green Innovation, and Green Organizational Culture on Organizational Sustainability, with Employee Green Behavior serving as a mediating variable. Focusing on PT Kalimantan Prima Persada (KPP Mining), one of Indonesia's prominent mining contractors, the research addresses the critical implementation gap between environmental policies and operational execution in response to increasing sustainability demands within the mining industry. Employing a quantitative approach, data were collected from 424 employees using structured questionnaires and analyzed through Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings demonstrate that Green Leadership, Innovation, and Organizational Culture each exert significant and positive effects on Organizational Sustainability, both directly and indirectly through the mediation of Employee Green Behavior. Employee behavior emerges as a pivotal mechanism in translating top-down environmental strategies into sustained organizational outcomes. This study advances the sustainability literature by empirically validating the mediating role of behavior in environmentally intensive sectors. In practical terms, the research offers actionable insights for mining companies seeking to embed sustainability within routine operations via leadership commitment, innovation capacity, and value-based cultural alignment. These findings align with Indonesia's broader national strategy to meet the Sustainable Development Goals (SDGs) and suggest strategic pathways for driving green transformation across the industrial landscape.

Keywords: Green Leadership, Green Innovation, Green Organizational Culture, Employee Green Behavior, Organizational Sustainability

INTRODUCTION

Mining—a cornerstone of global economic infrastructure—simultaneously poses one of the most complex environmental challenges of our time. Empirical evidence confirms that, while mining sustains national economies, it also generates serious ecological and social repercussions. This duality has prompted stakeholders worldwide to demand more than rudimentary regulatory adherence: they call for a deep integration of the Sustainable Development Goals (SDGs) within corporate governance and strategic planning.

In Indonesia—ranked among the top five coal exporters globally—this pressure between financial development and environmental obligation is especially articulated. Industry leaders like PT Kalimantan Prima Persada (KPP Mining) have responded with top-tier initiatives, including green leadership (GL), green innovation (GI), and green organizational culture (GOC). Be that because it may, in show disdain toward of these imperative enthusiastically, honest to goodness on-site supportability comes about remain patchy—a

circumstance habitually associated to clashing assignment of green sharpens at the agent level.

This study addresses a critical gap by exploring how these strategic green constructs (GL, GI, GOC) influence Organizational Sustainability (OS), and, crucially, how they translate into meaningful impact through Employee Green Behavior (EGB). Drawing on frameworks from behavioral and organizational theory, we propose a model in which frontline behavioral commitment is the linchpin holding together corporate sustainability strategies and tangible environmental performance.

Utilizing survey data from 424 mining employees and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), this research offers novel insights into the underexplored behavioral dimension of green transformation in a high-impact sector. By empirically validating EGB as a mediator, our findings contribute to a deeper understanding of how strategic initiatives convert into operational sustainability outcomes—offering both theoretical enrichment and practical direction for green leadership in the mining industry.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

Green Leadership (GL) refers to environmentally oriented leadership behaviors that promote sustainability by integrating ecological values into strategic vision, communication, and operations. According to Huo et al. (2022), green leaders act as role models, fostering a pro-environmental work climate that encourages employees to engage in sustainable practices. GL is positively associated with both individual and organizational environmental performance.

Green Innovation (GI) involves the development and implementation of environmentally friendly products, services, and processes. It includes eco-design, resource-efficient technologies, and clean production systems (Wang et al., 2021). Empirical research suggests that organizations embracing GI experience improved environmental and economic performance, thereby reinforcing their sustainability agendas.

Green Organizational Culture (GOC) reflects a system of shared values, norms, and beliefs that prioritize environmental stewardship throughout the organization. Onputtha et al. (2023) found that a strong green culture leads to increased environmental awareness and action among employees. GOC facilitates alignment between individual behavior and corporate sustainability goals.

Employee Green Behavior (EGB) encompasses both task-related and discretionary efforts that support environmental objectives within the workplace. Zacher et al. (2022) classify EGB into actions such as energy conservation, recycling, green innovation, and sustainability advocacy. EGB plays a pivotal role in bridging organizational intention and sustainability realization.

Organizational Sustainability (OS) is the organization's ability to maintain long-term economic viability while minimizing environmental and social harm. It is commonly assessed using the triple bottom line (TBL) framework—economic, environmental, and social dimensions (Dyllick & Muff, 2016). OS requires strategic alignment across all organizational layers.

Drawing upon these theoretical foundations, this study proposes a conceptual model that links GL, GI, and GOC to OS, with EGB serving as a key mediating mechanism. The following hypotheses are formulated:

H1: Green Leadership has a positive and significant effect on Organizational Sustainability.

H2: Green Innovation has a positive and significant effect on Organizational Sustainability.

H3: Green Organizational Culture has a positive and significant effect on Organizational Sustainability.

Sustainability.

H4: Employee Green Behavior has a positive and significant effect on Organizational Sustainability.

H5: Green Leadership positively influences Employee Green Behavior.

H6: Green Innovation positively influences Employee Green Behavior.

H7: Green Organizational Culture positively influences Employee Green Behavior.

H8: Employee Green Behavior mediates the relationship between Green Leadership and Organizational Sustainability.

H9: Employee Green Behavior mediates the relationship between Green Innovation and Organizational Sustainability.

H10: Employee Green Behavior mediates the relationship between Green Organizational Culture and Organizational Sustainability.

RESEARCH METHODS

A quantitative cross-sectional research design was employed to empirically test the proposed conceptual model. This approach is suitable for examining complex causal relationships between latent variables in organizational settings (Creswell, 2014).

The study population comprised employees from PT Kalimantan Prima Persada (KPP Mining), a major mining contractor in Indonesia. A purposive sampling technique was used to capture respondents involved in operations and functions with relevance to environmental sustainability. A total of 424 valid responses were collected and included in the analysis.

The five main constructs—Green Leadership (GL), Green Innovation (GI), Green Organizational Culture (GOC), Employee Green Behavior (EGB), and Organizational Sustainability (OS)—were measured using multi-item indicators adapted from previous validated studies (e.g., Huo et al., 2022; Wang et al., 2021; Onputtha et al., 2023; Zacher et al., 2022). All items utilized a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS version 3.3. This method is particularly suitable for prediction-oriented research involving complex models and medium-sized samples, in line with recommendations from Hair et al. (2022).

The analytical procedure involved two main stages. First, the measurement model was assessed through factor loadings, Composite Reliability (CR), Average Variance Extracted (AVE), and discriminant validity using the Fornell-Larcker criterion. Second, the structural model was evaluated using R^2 , Q^2 , SRMR, and f^2 statistics. Hypothesis testing was performed via bootstrapping with 5,000 subsamples to determine the significance of path coefficients.

RESULTS AND DISCUSSION

The results of the structural model analysis reveal several key findings. First, Green Leadership (GL), Green Innovation (GI), and Green Organizational Culture (GOC) each have a statistically significant positive effect on Organizational Sustainability (OS). This supports hypotheses H1 to H3 and aligns with previous research asserting the strategic relevance of environmental leadership and innovation in driving sustainable organizational outcomes (Wang et al., 2021; Onputtha et al., 2023).

Second, when examining the influence of the exogenous variables on Employee Green Behavior (EGB), both GI and GOC demonstrated significant positive effects, thereby confirming hypotheses H6 and H7. Interestingly, the effect of GL on EGB was found to be statistically insignificant, leading to the rejection of H5. This result may indicate that

leadership influence on green behavior is not uniformly perceived across employee levels, or it may require a stronger cultural or system-wide reinforcement to manifest in behavioral outcomes—suggesting a potential moderation or contextual variable worth exploring (cf. Zacher et al., 2022).

Third, EGB was shown to have a strong and significant positive effect on OS, confirming H4. Moreover, mediation analysis confirmed that EGB plays a partial mediating role in the relationships between GI and OS, as well as GOC and OS (supporting H9 and H10). However, the mediating effect of EGB in the GL → OS pathway (H8) was not statistically supported, which may reflect the indirect nature of leadership's influence on sustainability unless reinforced by culture or innovation.

These findings collectively reinforce the importance of behavioral mechanisms in translating organizational strategy into sustainable performance. Employee Green Behavior emerges as a crucial conduit through which innovation and culture are operationalized into measurable sustainability outcomes. This highlights the importance of cultivating internal environments that not only direct but also enable and empower green behavior at all organizational levels.

CONCLUSION

This study demonstrates that Green Leadership, Green Innovation, and Green Organizational Culture significantly contribute to Organizational Sustainability, with Employee Green Behavior (EGB) serving as a key mediating mechanism. These findings highlight the dual importance of top-down strategic orientation and bottom-up behavioral alignment in achieving sustainability objectives. The empirical evidence reinforces the notion that green-oriented leadership and innovation must be supported by a culture that enables and reinforces pro-environmental behaviors among employees.

From a managerial perspective, organizations should consider implementing targeted human resource initiatives that cultivate green behavior at all organizational levels. These may include environmental training programs, behavioral incentives, green performance metrics, and the integration of sustainability into recruitment and evaluation processes. Furthermore, innovation initiatives should be aligned with employee capabilities and reinforced through a culture that internalizes environmental values.

While the study offers valuable insights, it is not without limitations. The findings are based on a single organization within the mining industry and utilize a cross-sectional design, which limits the generalizability and inference of causal relationships. Future research should extend this model across different industries and cultural contexts using longitudinal or mixed-methods designs. Additionally, examining potential moderating factors such as organizational support or environmental regulation could provide a more nuanced understanding of green behavior dynamics in organizations.

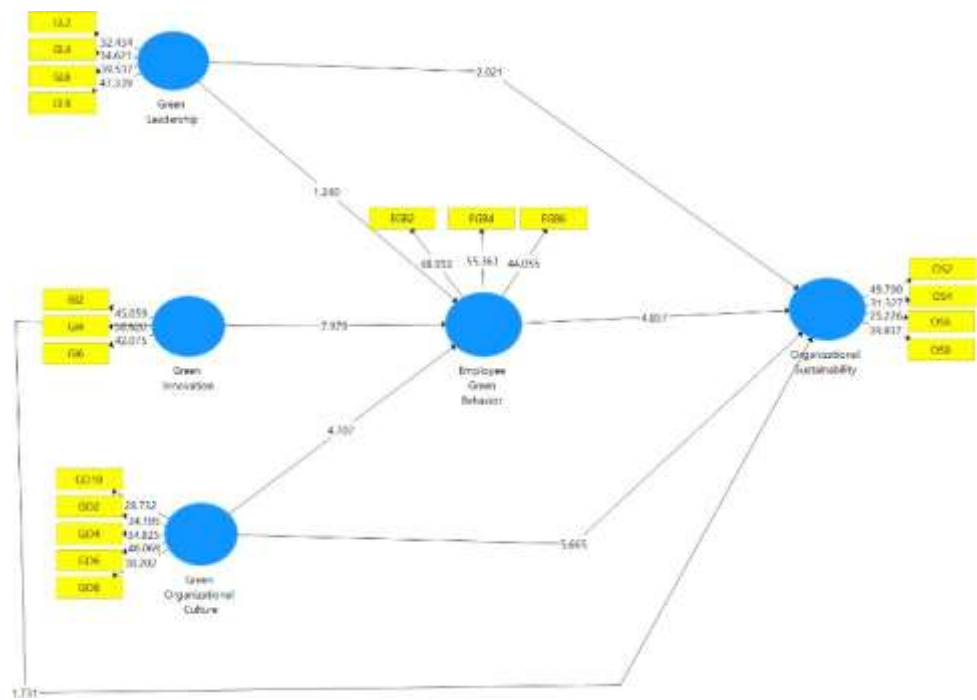


Figure Indirect Effect Testing

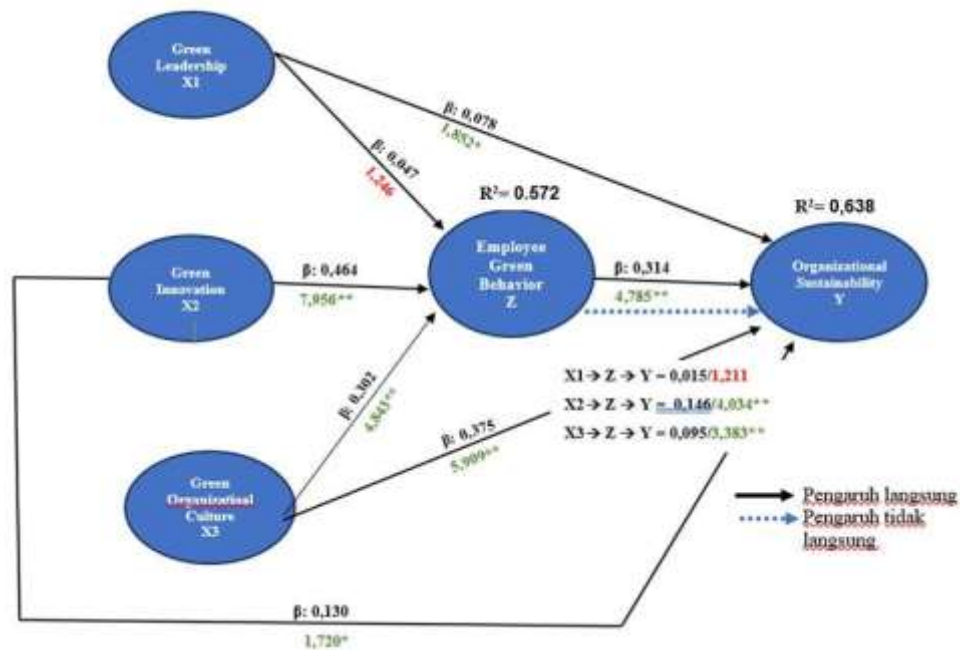


Figure Structural Model Results

Table Path Coefficients, T-Statistics, and P-Values

Relationship	Coefficient	T statistic (IO/STDEV)	P-value	Description
Direct Effects				
Green Leadership → Organizational Sustainability	0.078	1.852	0.032	Significant positive effect

Green Innovation → Organizational Sustainability	0.130	1.720	0.043	Significant positive effect
Green Organizational Culture → Organizational Sustainability	0.375	5.909	0.000	Significant positive effect
Employee Green Behavior → Organizational Sustainability	0.314	4.785	0.000	Significant positive effect
Green Leadership → Employee Green Behavior	0.047	1.246	0.107	Not significant
Green Innovation → Employee Green Behavior	0.464	7.956	0.000	Significant positive effect
Green Organizational Culture → Employee Green Behavior	0.302	4.843	0.000	Significant positive effect
Direct Effects				
Green Leadership → Employee Green Behavior → Organizational Sustainability	0.015	1.211	0.113	Not significant
Green Innovation → Employee Green Behavior → Organizational Sustainability	0.146	4.034	0.000	Significant positive effect
Green Organizational Culture → Employee Green Behavior → Organizational Sustainability	0.095	3.383	0.000	Significant positive effect

BIBLIOGRAPHY

- Chen, Y.-S., Chang, C.-H., & Lin, Y.-H. (2014). Green Transformational Leadership and Green Performance: The Mediation Effects of Green Mindfulness and Green Self-Efficacy. *Journal: Sustainability*, 6(10), 6604–6621.
- Denison, D. R., & Ko, I. (2016). Cultural due diligence in mergers and acquisitions. In S. Finkelstein & C.L. Cooper (Eds.), *Advances in mergers and acquisitions* (Vol. 15, pp. 53–72). Emerald Group Publishing Limited.
- Dyllick, T., & Muff, K. (2016). Clarifying the meaning of sustainable business: Introducing a typology from business-as-usual to true business sustainability. *Organization & Environment*, 29(2), 156–174.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). SAGE Publications.
- Huo, C., Safdar, M. A., Akhtar, M. W., & Ahmed, M. (2022). Linking responsible leadership and green innovation: The role of knowledge sharing and leader–member exchange. *Frontiers in Environmental Science*, 10, 945817.
- Karatepe, T., Ozturen, A., Karatepe, O. M., Uner, M. M., & Kim, T. T. (2022). Management commitment to the ecological environment, green work engagement and their effects on hotel employees' green work outcomes. *International Journal of Contemporary Hospitality Management*, 34(8), 3084–3112.
- Onputtha, S., Phophan, K., Iamsomboon, N., Bhumkittipich, P., & Sathiankomsorakrai, T. (2023). The impact of green organizational culture on green transportation and sustainable performance in the Thai automobile industry. *E3S Web of Conferences*, 389, 05014.
- Svensson, G., Høgevoid, N., Ferro, C., Varela, J. C. S., Padin, C., & Wagner, B. (2016). A triple bottom line dominant logic for business sustainability: Framework and empirical findings. *Journal of Business- to-Business Marketing*, 23(2), 153–188.
- Wang, C.-H. (2019). How organizational green culture influences green performance and competitive advantage: The mediating role of green innovation. *Journal of Manufacturing Technology Management*, 30(4), 666–683.
- Wang, M., Li, Y., Li, J., & Wang, Z. (2021). Green process innovation, green product innovation

- and its economic performance improvement paths: A survey and structural model. *Journal of Environmental Management*, 297, 113282.
- Zacher, H., Rudolph, C. W., & Katz, I. M. (2022). Employee green behavior as the core of environmentally sustainable organizations. *Annual Review of Organizational Psychology and Organizational Behavior*.
- Zhang, X., Panatik, S. A., & Zhang, N. (2024). Employee green behavior: Bibliometric-content analysis. *Heliyon*, 10(10), e31045.