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Green Leadership, Green Organizational Culture, and Sustainable Innovation: The Mediating Role of Organizational Commitment

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ABSTRACT

Objectives: This study examines the direct and mediated relationships of Green Transformational Leadership and Green Organizational Culture with Employee Sustainable Innovation, with Organizational Commitment serving as a mediating variable at PT Galic Artabahari.

Methodology: A quantitative explanatory study involved 132 employees of PT Galic Artabahari who had worked for at least one year. Data were collected using a structured questionnaire with a five point Likert scale and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS. The analysis assessed the measurement model, structural model, and direct and indirect relationships using bootstrapping.

Finding: Green Transformational Leadership positively and significantly influenced Organizational Commitment and Employee Sustainable Innovation. Green Organizational Culture also positively and significantly influenced Organizational Commitment and Employee Sustainable Innovation. Organizational Commitment positively and significantly influenced Employee Sustainable Innovation and significantly mediated the relationships between Green Transformational Leadership and Employee Sustainable Innovation and between Green Organizational Culture and Employee Sustainable Innovation. Both mediation effects were partial. The model explained 74.7% of the variance in Employee Sustainable Innovation and 41.5% of the variance in Organizational Commitment.

Conclusion: Sustainability oriented leadership and organizational culture contribute to employee sustainable innovation both directly and through Organizational Commitment. Strengthening sustainability oriented leadership, embedding green values in organizational practices, and fostering employee commitment can support the generation and implementation of sustainable innovations at the employee level.

Keywords: Green Transformational Leadership; Green Organizational Culture; Organizational Commitment; Employee Sustainable Innovation; Human Resource Management.

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INTRODUCTION

Human Resource Management (HRM) has evolved into a strategic function that shapes employee capabilities, attitudes, and behaviors to support long term organizational sustainability and performance. In the context of sustainability, employees play an important role in generating ideas, improving work processes, sharing knowledge, and implementing environmentally responsible practices. Recent research indicates that employees' green

innovation behavior is an important component in supporting organizational sustainability, particularly when organizational practices create conditions that encourage employees to participate in innovation and environmental improvement (Yang & Li, 2023; Shahzad et al., 2023). Therefore, organizations need HRM mechanisms that can encourage employees to continuously contribute to sustainable innovation.

Employee Sustainable Innovation (ESI) refers to employees' ability and willingness to generate, promote, and implement new ideas or practices that support long-term organizational improvement and sustainability. Two important organizational factors that may influence employee innovation are Green Transformational Leadership (GTL) and Green Organizational Culture (GOC). GTL integrates sustainability values into leadership through role modeling, inspirational motivation, intellectual stimulation, and employee support, while GOC represents shared sustainability-oriented values, norms, and practices that guide employee behavior. Recent empirical evidence demonstrates that green transformational leadership can stimulate green innovation by providing direction, motivation, and support for innovation, while green organizational culture creates an organizational environment that facilitates green innovation and sustainability oriented outcomes (Chen, 2023; Huynh et al., 2024; Zhao et al., 2024).

However, favorable leadership and organizational culture may not automatically result in consistent employee innovation. Organizational Commitment (OC) may act as an important psychological mechanism because employees who identify with organizational values and feel attached to their organization are more likely to support organizational goals and contribute beyond their formal responsibilities. Recent research has demonstrated that organizational commitment can play an important role in explaining employees' sustainability-oriented behavior and innovation. (Yang & Li 2023), for example, found that green organizational commitment mediates the relationship between green human resource management and employees' green innovation behavior. Similarly, recent research has emphasized the importance of organizational culture and sustainability-oriented organizational practices in strengthening employees' commitment and innovation-related outcomes (Li et al., 2025; Kurnaz, 2025)

The empirical problem is supported by a preliminary survey of 30 employees at PT Galic Artabahari. The results showed positive responses of 85.3% for GTL, 83.3% for GOC, and 88.9% for OC, while ESI was comparatively lower at 73.3%. The lowest ESI result was related to employees' active involvement in implementing innovative ideas (70.0%). These findings indicate a potential gap between favorable organizational conditions and employees' actual sustainable innovation behavior. This phenomenon is consistent with recent research suggesting that the presence of green leadership and organizational sustainability practices does not necessarily guarantee the realization of innovation unless employees are actively involved in knowledge sharing, green innovation, and sustainability oriented behaviors (Yang & Li, 2023; Huynh et al., 2024). Therefore, the relatively lower level of employee sustainable innovation at PT Galic Artabahari warrants further investigation into how organizational leadership and culture can be translated into employees' actual innovative behavior.

Previous studies have examined green transformational leadership, green organizational culture, green innovation, and employee sustainability related outcomes, but these relationships have often been examined separately or at the organizational level (Huynh et al., 2024; Zhao et al., 2024). Moreover, the mediating role of organizational commitment in the relationships between both GTL and GOC and employee level sustainable innovation remains insufficiently integrated within a single HRM based research model. This study therefore addresses this gap

by positioning GTL and GOC as independent variables, OC as a mediating variable, and ESI as the dependent variable within an HRM perspective.

This study aims to examine the influence of GTL and GOC on ESI, both directly and indirectly through OC. Specifically, it examines the effects of GTL and GOC on OC, the effects of GTL, GOC, and OC on ESI, and the mediating effects of OC on the relationships between GTL and ESI and between GOC and ESI.

LITERATURE REVIEW

Resource Based View and Current Knowledge

This study is grounded in the Resource Based View (RBV), which explains that organizations can develop sustainable competitive advantage through valuable and difficult to imitate internal resources. From a Human Resource Management (HRM) perspective, leadership capabilities, organizational culture, employee commitment, and employee capabilities can function as strategic intangible resources. In this study, Green Transformational Leadership (GTL) and Green Organizational Culture (GOC) represent organizational resources, Organizational Commitment (OC) represents an important human resource mechanism, and Employee Sustainable Innovation (ESI) represents an employee level capability resulting from the effective integration of these resources.

Green Transformational Leadership refers to leadership that integrates sustainability oriented values into transformational leadership behaviors, including role modeling, inspirational motivation, intellectual stimulation, and individualized consideration. GTL encourages employees to develop new ideas, challenge existing practices, and participate in continuous improvement. Green Organizational Culture refers to shared sustainability oriented values, norms, and practices that guide employees toward responsible behavior, collaboration, learning, and innovation. Organizational Commitment reflects employees' psychological attachment and willingness to contribute to organizational goals, while Employee Sustainable Innovation represents employees' continuous ability to generate, promote, and implement ideas that support long term organizational improvement. These conceptualizations are consistent with the theoretical constructs developed in the thesis.

State of the Art and Relevant Empirical Studies

Recent studies indicate that sustainability oriented leadership and organizational culture are important determinants of innovation and employee related outcomes. (Liu et al., 2023) found that Green Transformational Leadership can strengthen employee sustainability oriented behavior, while (Huynh et al., 2024) demonstrated that Green Transformational Leadership and Green Organizational Culture positively influence green innovation and sustainable performance. Similarly, (Mutiarra et al., 2023) found that transformational leadership and organizational culture contribute to employee related outcomes through organizational mechanisms.

Research has also emphasized the importance of organizational commitment. (Yang & Li, 2023) showed that green HRM influences employee green innovation behavior through green organizational commitment and knowledge sharing. (Li et al., 2025) further demonstrated that Green Organizational Culture positively affects employee green organizational commitment. Previous research has frequently examined green innovation, employee innovative behavior, or sustainable performance separately. Sustainable innovation has also often been examined as an organizational outcome rather than as a continuous employee level

behavior. In addition, limited research has integrated Green Transformational Leadership, Green Organizational Culture, Organizational Commitment, and Employee Sustainable Innovation within one HRM based model. Therefore, this study extends the existing literature by positioning Organizational Commitment as a mediator between both sustainability oriented leadership and culture and employee sustainable innovation. This employee centered integration represents the state of the art contribution of the study.

Hypotheses Development

Green Transformational Leadership (GTL) is expected to strengthen Organizational Commitment because leaders who communicate sustainability oriented goals, provide support, and demonstrate consistent role model behavior can increase employees' value alignment, identification, and willingness to contribute to organizational objectives. Transformational leadership can strengthen employees' psychological attachment by providing a clear organizational vision and encouraging employees to identify with organizational goals. Recent empirical evidence also indicates that sustainability oriented leadership contributes to positive employee attitudes and organizational outcomes. (Rahmadani et al., 2025) found that Green Transformational Leadership is associated with Organizational Commitment in the context of green innovation, while recent research further demonstrates that transformational leadership can influence employees' organizational attitudes and commitment through leadership related mechanisms. Therefore, when leaders consistently demonstrate sustainability values and involve employees in organizational improvement, employees are more likely to develop stronger commitment toward the organization.

H1: Green Transformational Leadership positively affects Organizational Commitment.

Green Organizational Culture (GOC) provides shared values, norms, and practices that shape employees' perceptions of organizational goals and responsibilities. When sustainability values are embedded in daily work, employees are more likely to experience value congruence, organizational identification, and stronger attachment to the organization. Empirical evidence supports this relationship. Recent research found that green organizational culture has a significant positive effect on employee green organizational commitment, with organizational identity functioning as an important mechanism in this relationship (Li et al., 2025). Similarly, research on green culture and organizational commitment has demonstrated that employees who perceive stronger green oriented organizational values tend to report higher levels of organizational commitment. These findings indicate that a sustainability oriented culture can strengthen employees' psychological connection with their organization because employees perceive greater alignment between their own values and organizational values.

H2: Green Organizational Culture positively affects Organizational Commitment.

Organizational Commitment (OC) is expected to encourage Employee Sustainable Innovation (ESI) because employees who feel psychologically attached to their organization are more willing to invest discretionary effort, participate in organizational improvement, share knowledge, and support long term organizational goals. Organizational commitment can therefore function as an important human resource mechanism that translates employees' attachment to the organization into innovative behavior. Empirical evidence supports this argument. (Yang & Li, 2023) found that green organizational commitment significantly mediates the relationship between green human resource management and employees' green innovation behavior. This finding indicates that employees' commitment toward organizational sustainability can encourage them to participate more actively in innovation related activities.

Therefore, stronger organizational commitment is expected to increase employees' willingness to generate, promote, and implement sustainable ideas.

H3: Organizational Commitment positively affects Employee Sustainable Innovation.

Green Transformational Leadership can directly encourage Employee Sustainable Innovation by providing employees with a sustainability oriented vision, intellectual stimulation, motivation, and support for experimentation. Leaders who communicate environmental goals and encourage employees to challenge existing practices can create conditions in which employees are more willing to generate and implement new ideas. Recent empirical research supports the positive relationship between GTL and innovation. (Huynh et al., 2024) found that Green Transformational Leadership significantly contributes to green innovation, while research conducted in the hospitality sector also demonstrates that GTL can stimulate green innovation through mechanisms that encourage employees to engage in green oriented activities. These findings suggest that sustainability oriented leadership can motivate employees to move beyond routine work and participate in innovation aimed at improving environmental and organizational outcomes.

H4: Green Transformational Leadership positively affects Employee Sustainable Innovation.

Green Organizational Culture can directly influence Employee Sustainable Innovation because shared sustainability values create a social and organizational environment that encourages collaboration, knowledge sharing, experimentation, and continuous improvement. When sustainability becomes embedded in organizational routines and norms, employees are more likely to perceive environmentally oriented innovation as an expected and legitimate part of their work. Empirical evidence supports this relationship. (Huynh et al., 2024) found that Green Organizational Culture significantly contributes to green innovation and sustainable performance. Similarly, recent research demonstrates that green organizational culture can shape employees' green oriented attitudes and behaviors by strengthening their identification with organizational sustainability values (Li et al., 2025). Therefore, a stronger green organizational culture is expected to encourage employees to generate, promote, and implement sustainable innovations.

H5: Green Organizational Culture positively affects Employee Sustainable Innovation.

Organizational Commitment is expected to mediate the relationship between Green Transformational Leadership and Employee Sustainable Innovation. Green transformational leaders can strengthen employees' identification with organizational sustainability goals by communicating a clear vision, providing support, and demonstrating sustainability oriented behaviors. This stronger psychological attachment may subsequently encourage employees to devote greater effort to organizational improvement and innovation. Recent research demonstrates that green oriented organizational practices can influence employee green innovation behavior through organizational commitment related mechanisms (Yang & Li, 2023). In addition, research has demonstrated the importance of organizational commitment as an intervening mechanism through which leadership influences employee related outcomes. Therefore, GTL is expected to influence ESI not only directly, but also indirectly by strengthening employees' organizational commitment.

H6: Organizational Commitment mediates the relationship between Green Transformational Leadership and Employee Sustainable Innovation.

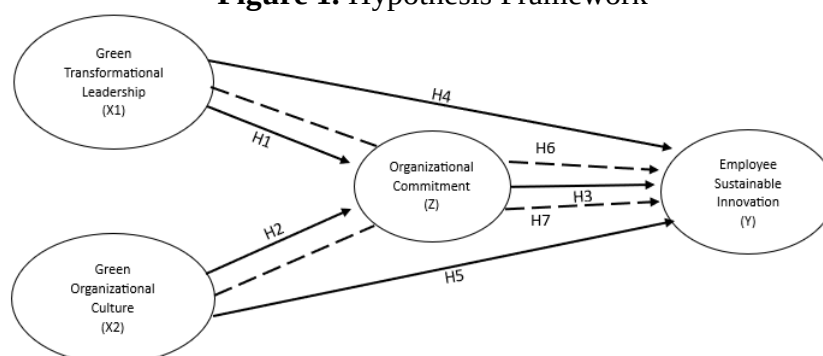
Green Organizational Culture may influence Employee Sustainable Innovation through Organizational Commitment. Shared sustainability values can strengthen employees' identification with the organization and create a stronger sense of belonging, while stronger organizational commitment can encourage employees to contribute knowledge, cooperation, discretionary effort, and innovative ideas. Recent empirical evidence demonstrates that green organizational culture significantly influences employee green organizational commitment (Li et al., 2025). Furthermore, (Yang & Li, 2023) found that green organizational commitment plays an important role in explaining employees' green innovation behavior. These findings provide a basis for proposing that green organizational culture can contribute to employee sustainable innovation through the psychological mechanism of organizational commitment.

H7: Organizational Commitment mediates the relationship between Green Organizational Culture and Employee Sustainable Innovation.

Theoretical Framework

Based on RBV and the empirical evidence, GTL and GOC are positioned as strategic organizational resources that influence OC and ESI. OC functions as the psychological and human capital mechanism through which organizational resources are translated into employee behavior. ESI represents the employee level capability resulting from the interaction of these resources. Thus, the theoretical framework proposes both direct relationships from GTL and GOC to ESI and indirect relationships through OC.

Figure 1. Hypothesis Framework



METHOD

This study employed a quantitative research approach to examine the relationships between Green Transformational Leadership, Green Organizational Culture, Organizational Commitment, and Employee Sustainable Innovation. The research was conducted at PT Galic Artabahari. The quantitative approach was selected because the study aims to empirically test the proposed hypotheses using numerical data and statistical analysis.

The population consisted of 132 employees of PT Galic Artabahari who had worked for at least one year. The minimum one year tenure criterion was applied to ensure that respondents had sufficient experience and understanding of the organization's leadership practices, organizational culture, and work environment. Due to the manageable population size, all 132 eligible employees were included in the study using a census sampling technique.

Data were collected using a structured, closed ended questionnaire distributed online through Google Forms. The questionnaire was developed based on the indicators of the four

research variables. Responses were measured using a five point. Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The questionnaire measured Green Transformational Leadership, Green Organizational Culture, Organizational Commitment, and Employee Sustainable Innovation.

The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS SEM) with SmartPLS software. PLS SEM was selected to examine the relationships between the latent variables and to test the proposed direct and mediating effects. The analysis consisted of three main stages. First, the measurement model (outer model) was evaluated through convergent validity, discriminant validity, and construct reliability. Second, the structural model (inner model) was evaluated using inner VIF, coefficient of determination (R^2), predictive relevance (Q^2), and model fit through SRMR. Third, hypothesis testing was conducted using bootstrapping to assess the significance of the direct and indirect relationships among the constructs.

RESULTS AND DISCUSSION

Table 1. Respondent Characteristics

Characteristic	Category	n	%
Gender	Male	77	58.33
	Female	55	41.67
Age	21-30 years	12	9.09
	31-40 years	91	68.94
	41-50 years	29	21.97
Education	Senior High School	7	5.30
	D3	14	10.61
	S1	92	69.70
	S2	19	14.39
Years of service	> 1 year	132	100.00

The study obtained complete responses from all 132 eligible employees. Male respondents represented 58.33% and female respondents 41.67%. Most respondents were aged 31-40 years (68.94%), while 21.97% were 41-50 years and 9.09% were 21-30 years. In terms of education, 69.70% held a bachelor's degree (S1), followed by S2 (14.39%), D3 (10.61%), and senior high school (5.30%). All respondents had more than one year of service, satisfying the inclusion criterion. The profile indicates that respondents generally had sufficient organizational experience to evaluate leadership, culture, commitment, and innovation practices.

Measurement Model

Table 2. Convergent Validity Result

Variable	Indicator	Outer Loadings	Result
Green Transformational Leadership	GTL 01	0.900	Valid
	GTL 02	0.905	Valid
	GTL 03	0.920	Valid
	GTL 04	0.903	Valid
	GTL 05	0.868	Valid
	GTL 06	0.914	Valid
	GTL 07	0.901	Valid
	GTL 08	0.905	Valid
	GTL 09	0.896	Valid

Variable	Indicator	Outer Loadings	Result
Green Organizational Culture	GOC 01	0.921	Valid
	GOC 02	0.891	Valid
	GOC 03	0.886	Valid
	GOC 04	0.894	Valid
	GOC 05	0.899	Valid
	GOC 06	0.913	Valid
	GOC 07	0.924	Valid
	GOC 08	0.870	Valid
	GOC 09	0.892	Valid
Organizational Commitment	OC 01	0.938	Valid
	OC 02	0.938	Valid
	OC 03	0.943	Valid
	OC 04	0.931	Valid
	OC 05	0.935	Valid
	OC 06	0.917	Valid
	OC 07	0.935	Valid
Employee Sustainable Innovation	ESI 01	0.956	Valid
	ESI 02	0.953	Valid
	ESI 03	0.950	Valid
	ESI 04	0.962	Valid
	ESI 05	0.963	Valid
	ESI 06	0.957	Valid
	ESI 07	0.964	Valid

Based on the test results in Table 4.6 above, it is known that all indicators have outer loading values above 0.70, thus confirming their validity (Hair et al., 2022). The highest outer loading value is for the ESI 07 indicator with a score of 0.964, and the lowest is for the GTL 05 indicator with a score of 0.868.

Table 3. Measurement Model Result

Construct	Final indicators	Loading range	AVE	Cronbach's α	CR
GTL	9	0.868-0.920	0.812	0.971	0.975
GOC	9	0.870-0.924	0.809	0.970	0.974
OC	7	0.917-0.943	0.872	0.976	0.979
ESI	7	0.950-0.964	0.917	0.985	0.987

The final measurement model demonstrates strong measurement quality. All retained indicators have outer loadings above 0.70, with the highest loading recorded for ESI07 (0.964) and the lowest for GTL05 (0.868). AVE values range from 0.809 to 0.917, indicating that each construct explains more than half of the variance in its indicators. Reliability is also high, with Cronbach's alpha ranging from 0.970 to 0.985 and composite reliability ranging from 0.974 to 0.987. These results indicate that the constructs are measured consistently and that the retained indicators adequately represent their intended concepts.

Table 4. Discriminant Validity Result

Construct	$\sqrt{\text{AVE}}$	Highest correlation	HTMT range	Decision
ESI	0.958	0.796	0.674-0.811	Discriminant validity supported
GOC	0.899	0.661	0.457-0.674	Discriminant validity supported
GTL	0.901	0.633	0.457-0.646	Discriminant validity supported
OC	0.934	0.796	0.475-0.811	Discriminant validity supported

Discriminant validity was also supported. The Fornell Larcker square root of AVE values were 0.958 for ESI, 0.899 for GOC, 0.901 for GTL, and 0.934 for OC; each exceeded the relevant inter construct correlations. HTMT values ranged from 0.457 to 0.811, all below the 0.90 criterion. The three measurement checks cross loadings, Fornell Larcker, and HTMT therefore provide consistent evidence that the four constructs are empirically distinguishable.

Table 5. Structural Model Evaluation

Indicator	Value	Interpretation
Inner VIF	1.247-1.710	No critical collinearity
R ² -ESI	0.747	Strong
R ² -OC	0.415	Moderate
Q ² -ESI	0.679	Good predictive relevance
Q ² -OC	0.359	Good predictive relevance
SRMR	0.033	Good fit

The structural model shows no critical multicollinearity because all inner VIF values are below 5. The model explains 74.7% of the variance in Employee Sustainable Innovation and 41.5% of the variance in Organizational Commitment. Thus, the predictors included in the model provide strong explanatory power for ESI and moderate explanatory power for OC. The Q² values are positive and substantial (0.679 for ESI and 0.359 for OC), indicating predictive relevance. The SRMR value of 0.033 indicates a good model fit according to the criterion used in the thesis. Overall, the structural model provides a suitable basis for hypothesis testing.

Figure 2. Bootstrapping Test Result

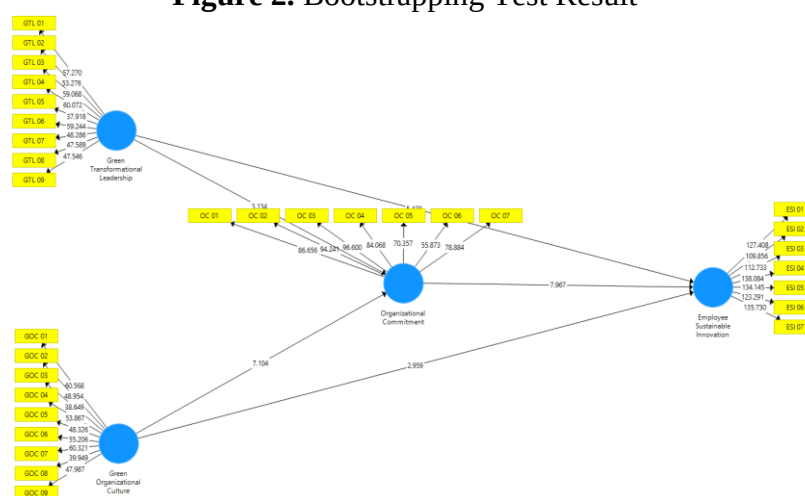


Table 6. Hypothesis Testing Result

Hyp.	Relationship	β	t	p	Decision
H1	GTL → OC	0.245	3.134	0.002	Accepted
H2	GOC → OC	0.497	7.104	<0.001	Accepted
H3	OC → ESI	0.535	7.967	<0.001	Accepted
H4	GTL → ESI	0.291	5.430	<0.001	Accepted
H5	GOC → ESI	0.207	2.959	0.003	Accepted
H6	GTL → OC → ESI	0.131	2.863	0.004	Accepted
H7	GOC → OC → ESI	0.266	5.532	<0.001	Accepted

All seven hypotheses are supported. The following discussion interprets each result in relation to the theoretical framework and previous evidence.

Discussion

Green Transformational Leadership → Organizational Commitment

The results show that Green Transformational Leadership has a positive and significant effect on Organizational Commitment ($\beta = 0.245$; $t = 3.134$; $p = 0.002$), indicating that H1 is supported. This finding suggests that sustainability oriented leadership can strengthen employees' psychological attachment to the organization. In the context of PT Galic Artabahari, leaders who communicate environmental objectives, encourage employees to contribute to organizational improvement, and demonstrate commitment to sustainability can strengthen employees' identification with organizational values. When employees perceive that leaders consistently promote sustainability oriented goals, they are more likely to perceive these goals as part of the organization's identity and become more willing to remain committed to the organization. This finding is consistent with recent research indicating that Green Transformational Leadership can strengthen employees' organizational commitment and support sustainability oriented organizational outcomes (Rahmadani et al., 2025). Therefore, the positive relationship found in this study indicates that Green Transformational Leadership represents an important leadership mechanism for strengthening Organizational Commitment.

Green Organizational Culture → Organizational Commitment

The results demonstrate that Green Organizational Culture has a positive and significant effect on Organizational Commitment ($\beta = 0.497$; $t = 7.104$; $p < 0.001$), supporting H2. The finding indicates that organizational values and practices emphasizing environmental sustainability can strengthen employees' commitment to the organization. When sustainability is embedded in organizational norms, routines, and shared values, employees may perceive greater alignment between their individual values and organizational values. Such value congruence can strengthen employees' sense of belonging and psychological attachment to the organization. This finding is consistent with recent research showing that Green Organizational Culture significantly influences employee green organizational commitment, with organizational identity playing an important role in explaining this relationship (Li et al., 2025). Therefore, the findings suggest that establishing a strong sustainability oriented culture is important for developing employees' commitment to the organization.

Organizational Commitment → Employee Sustainable Innovation

Organizational Commitment has a positive and significant effect on Employee Sustainable Innovation ($\beta = 0.535$; $t = 7.967$; $p < 0.001$), supporting H3. This result indicates that employees with stronger psychological attachment to the organization are more likely to contribute to sustainable innovation activities. Employees who feel committed to their organization may be more willing to invest additional effort, share ideas, participate in problem solving, and support the implementation of new practices that improve organizational sustainability. This finding is consistent with (Yang & Li, 2023), who demonstrated the importance of green organizational commitment in promoting employees' green innovation behavior. The result therefore suggests that Organizational Commitment can function as an important human resource mechanism that encourages employees to move beyond routine responsibilities and actively participate in sustainable innovation.

Green Transformational Leadership → Employee Sustainable Innovation

The findings indicate that Green Transformational Leadership has a positive and significant effect on Employee Sustainable Innovation ($\beta = 0.291$; $t = 5.430$; $p < 0.001$), supporting H4. This result demonstrates that sustainability oriented leadership can directly encourage employees to generate and implement innovative ideas related to sustainability. Leaders who communicate a clear environmental vision, encourage employees to reconsider existing practices, and provide support for experimentation can create conditions that facilitate sustainable innovation. This finding is consistent with (Huynh et al., 2024), who found that Green Transformational Leadership contributes significantly to green innovation. The result suggests that leadership at PT Galic Artabahari plays an important role in transforming sustainability objectives into employee level innovative activities.

Green Organizational Culture → Employee Sustainable Innovation

The results show that Green Organizational Culture has a positive and significant effect on Employee Sustainable Innovation ($\beta = 0.207$; $t = 2.959$; $p = 0.003$), supporting H5. This finding indicates that a culture emphasizing sustainability can encourage employees to participate in innovative activities that contribute to environmental and organizational improvement. A strong green culture establishes shared expectations regarding sustainability and makes environmentally oriented innovation more acceptable and meaningful within the workplace. When employees perceive that sustainable practices are valued by the organization, they are more likely to exchange knowledge, collaborate, experiment with new approaches, and contribute ideas for improvement. This finding is consistent with (Huynh et al., 2024), who found that Green Organizational Culture contributes to green innovation and sustainable performance. Therefore, the findings confirm that organizational culture is an important contextual factor in encouraging Employee Sustainable Innovation.

Mediating Role of Organizational Commitment in the GTL → ESI Relationship

The mediation analysis shows that Organizational Commitment significantly mediates the relationship between Green Transformational Leadership and Employee Sustainable Innovation ($\beta = 0.131$; $t = 2.863$; $p = 0.004$), supporting H6. The mediation effect indicates that Green Transformational Leadership influences Employee Sustainable Innovation not only directly but also indirectly by strengthening employees' Organizational Commitment. This suggests that sustainability oriented leadership can first build employees' psychological attachment and identification with organizational goals, which subsequently encourages employees to devote greater effort to sustainable innovation activities. The finding is consistent with research emphasizing the role of organizational commitment as an important mechanism connecting sustainability oriented organizational practices with employee innovation behavior (Yang & Li, 2023). Because the direct effect of Green Transformational Leadership on Employee Sustainable Innovation remains significant, the mediation can be interpreted as partial mediation. Thus, leadership contributes to sustainable innovation through both a direct pathway and an employee commitment based pathway.

Mediating Role of Organizational Commitment in the GOC → ESI Relationship

The results further demonstrate that Organizational Commitment significantly mediates the relationship between Green Organizational Culture and Employee Sustainable Innovation ($\beta = 0.266$; $t = 5.532$; $p < 0.001$), supporting H7. This finding indicates that Green Organizational Culture can encourage sustainable innovation partly by strengthening employees' commitment to the organization. A culture that consistently emphasizes sustainability can increase employees' identification with organizational values and strengthen

their psychological attachment to the organization. This stronger commitment may subsequently encourage employees to contribute ideas, collaborate with colleagues, and participate in the implementation of sustainable innovations. The finding is consistent with (Li et al., 2025), who found that Green Organizational Culture significantly influences employee green organizational commitment, and with (Yang & Li, 2023), who highlighted the importance of green organizational commitment in promoting employee green innovation behavior. Since the direct effect of Green Organizational Culture on Employee Sustainable Innovation remains significant, Organizational Commitment functions as a partial mediator in this relationship.

Theoretical and Managerial Implications

The findings extend the application of RBV to the employee level by showing how intangible HRM resources can be connected in a sequence from organizational conditions to employee capability. GTL and GOC are not merely contextual variables; they represent organizational resources that influence employee attitudes and behaviors. OC functions as a human capital mechanism that helps convert those resources into sustained innovative action. The strong R^2 for ESI further suggests that the integrated model is useful for explaining employee level sustainable innovation within the research setting.

For management, the results indicate that sustainability programs should not rely only on formal environmental policies. First, leaders should communicate sustainability goals clearly, demonstrate the desired behavior, provide coaching, and create opportunities for employees to contribute ideas. Second, green cultural values should be embedded into daily work through participation, collaboration, learning, knowledge sharing, and recognition. Third, management should strengthen organizational commitment by improving communication, recognizing employee contributions, supporting development, and involving employees in decisions related to improvement. Because OC is the strongest direct predictor of ESI, commitment building practices deserve particular attention. Finally, organizations can establish suggestion systems, continuous improvement teams, and recognition mechanisms so that employee ideas are more consistently translated into implementation.

CONCLUSION AND SUGGESTIONS

Conclusion

The study addresses the research gap concerning the fragmented explanation of employee level sustainable innovation by integrating Green Transformational Leadership, Green Organizational Culture, and Organizational Commitment in one HRM centered model. All seven hypotheses were supported. GTL positively and significantly increases OC and ESI; GOC positively and significantly increases OC and ESI; and OC has the strongest direct effect on ESI. OC also significantly mediates both the GTL–ESI and GOC–ESI relationships, while the direct effects remain significant, indicating partial mediation. The model explains 74.7% of ESI variance and 41.5% of OC variance. These findings indicate that sustainable innovation at the employee level is strengthened when organizations combine sustainability oriented leadership, a supportive green culture, and strong employee commitment. From an RBV perspective, these HRM related intangible resources can be integrated into employee capabilities that support long term organizational sustainability.

Suggestions

This study has several limitations. First, the research used a cross sectional design and data from a single organization, so causal interpretation and generalization to other industries or organizational settings should be made cautiously. Second, all measures were self reported, which may introduce common method or social desirability bias. Third, the final measurement model required removal of several indicators with low outer loadings; therefore, future research should further validate the measurement structure of ESI and the other constructs. Fourth, the model focuses on GTL, GOC, and OC and does not include other potentially relevant individual or organizational mechanisms.

Future studies could use longitudinal or time lagged designs to observe changes in commitment and sustainable innovation after leadership development or cultural interventions. Research across multiple manufacturing firms and industries could improve generalizability and allow comparative or multi group analysis. Additional variables such as Green Human Resource Management, green innovation climate, environmental knowledge, employee green behavior, green psychological climate, environmental passion, perceived organizational support, or psychological safety could also be examined where theoretically justified. Finally, mixed method or multi source research combining surveys with interviews, focus groups, supervisor assessments, or objective innovation indicators could provide deeper insight into how employees interpret sustainability expectations and convert them into implemented innovations.

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