
The Influence of Knowledge-Oriented Leadership on Enhancing Innovative Green Work Behavior with Green Work Engagement as A Mediator

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Abstract

Objective – This study investigates green HRM practices and knowledge-oriented leadership facilitating creative, green work in SMEs. This paper emphasizes the ways that sharing of leadership stimulates a green ideas climate. This type of leadership stimulates the sharing of knowledge, essential for green behavior, behaving as a coach encouraging the team with green and creative ideas. The emphasis here turns to "green work engagement" with the ways the employees relate to green practices such as recycling and energy conservation. Results indicate participative behavior contributes to green and creative work. Recent studies highlight the important role of knowledge-oriented leadership in building organizational trust and enhancing innovative behavior, especially in the green context

Design/Methodology/Approach – Examined this correlation. Data assisted with the analysis of the impact that the practices of HR and leadership styles have on green innovations and their outcomes from actual work experience. The method accredited the theoretical relationships utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM)

Findings – The study confirms the interconnectedness of KOL, GWE, and GIWB and supports the implementation of integrated management practices enhance employee engagement and encourage innovation in the environment of a green workplace.

Implications – The research concludes that the integration of the sustainability policies of HR with the sharing of leadership styles significantly enhances green innovative work behavior. Green innovation flourishes through open communication, exchange of information, and facilitative regulations

Keywords: Knowledge-Oriented Leadership, Green Work Innovative Behavior, Green Work Engagement



INTRODUCTION

In the era of globalization and increasing environmental awareness, organizations are required to adapt and innovate sustainably. The movement of Micro, Small and Medium Enterprises (MSMEs) is very important in encouraging growth and increasing economic development and employment (Deo et al., 2025). Green innovation has become crucial for companies to achieve sustainable competitive advantage (Yu et al., 2024). Green innovative work behavior (GIWB) is key to realizing green innovation at both the individual and organizational levels. (Al-Ayed, 2024) GIWB includes the search for new environmentally friendly ideas, the development of innovative solutions, and the implementation of sustainable practices in the workplace. Leadership and human resource management are very vital to help the company expand and develop its abilities, but people perceive things differently (Augi et al., 2020; Purnomo et al., 2022; Sambung, 2020, 2022). Knowledge-oriented leadership (KOL) supports businesses to become innovative by creating environments where people produce, exchange, and apply new information and come up with and execute new ideas (Le & Do, 2023). KOL contributes a lot to encouraging staff to exchange information, enabling the success of innovation. By creating an environment where information is valued and exchanged, KOL can contribute to inspiring people to come up with new ideas and improve the general performance of the business. From past research, evidence indicated that knowledge-oriented leadership may encourage individuals to come up with new ideas and introduce innovation into organizations (Rehman & Iqbal, 2020)).

There are research gaps on the influence of knowledge-oriented leadership on innovative work behavior for environmental purposes. The current research seeks to fill these research gaps by investigating the relation between knowledge-based leadership and innovative, environmentally friendly work conduct, bearing in mind the ecological human resources and worker involvement as the main focal points. Apart from the importance of the style of a leader in organizations, especially small and medium-sized firms, the impact of green human resource practices becomes extremely important these days because every business strives hard to ensure the sustainability of the environment ((Jnaneswar, 2024). Hence, this research seeks to bridge this gap in understanding by examining the influence of Green HRM on the environmental performance of small businesses in Indonesia. No research had examined the impact of knowledge-oriented leadership (KOL) on fostering green, innovative behavior in small firms in Indonesia. According to the (Shahbaz et al., 2024) research, there are various proposed methods for enhancing Green Innovative Work Behavior (GIWB), such as enhancing environmental awareness by providing employees with training and education on the importance of environmentally friendly behavior and its beneficial impact on the environment. Support and Resources: The staff should be given all the resources needed to translate new ideas into actions that make a positive impact on the environment. Recognition and Awards: The staff that supports green innovation should receive recognition and rewards because their appreciation will make them work on green practices. Use of Transformative Leadership: Recent literature suggests that the leadership approach adopted to increase the GIWB is knowledge-oriented (knowledge-oriented leadership, KOL).

Knowledge-oriented leadership (KOL) forms a leadership model that emphasizes the process of generating, disseminating, and implementing knowledge to develop innovative solutions. KOL practitioners develop an organizational climate that supports learning, collaboration, and the testing of new. Green Innovative Work Behavior (GIWB) refers to the proactive behavior of employees that creates, suggests, and implements innovative ideas with environmental sustainability in mind (Huang et al., 2024). Given the global issues emerging from climate change and the pressure of

environmental regulations, GIWB becomes ever more important for organizations that strive to develop a sustainable competitive edge. The existing research suggests green transformational leadership plays a key role in impacting GIWB through the formulation of a green collective vision. However, the specific role of KOL—particularly of the management of knowledge—within the green innovation arena remains poorly explored. Earlier studies (Naqshbandi & Jasimuddin, 2018)) measured the capabilities of knowledge management as mediators between KOL and open innovation without considering the mediation effects on GIWB. Constructs of green knowledge sharing (transfer of green information of relevance to the environment) and green organizational trust (trust in green activities) have not yet appeared as potential mediators. emphasizes the need to replace traditional mediators (e.g., green exchange of knowledge) with green work engagement in the KOL-GIWB process. Green work engagement (GWE) refers to the amount of individuals' emotional, mental, and physical engagement with environmentally friendly conduct (e.g., energy conservation, recycling, green innovations). Current research (Dumont et al., 2017) proposes that GWE proves to be a better predictor of GIWB than traditional knowledge-based mediators because it includes intrinsic motivation and emotional commitment to sustainability. Theoretical Support: Job Demands-Resources (JD-R) Model (Bakker & Albrecht, 2018; Bakker & Leiter, 2010), where KOL functions as a job resource that triggers environment-based work engagement. Exploring the minimum GWE (threshold) intake so that KOL interventions can optimally induce GIWB. Recent studies highlight the important role of knowledge-oriented leadership in building organizational trust and enhancing innovative behavior, especially in the green context.

Literature Review

Knowledge-oriented leadership

Knowledge-oriented leadership emphasizes the management of knowledge resources and processes within an organization. Leadership in this style ensures the generation of new knowledge, dissemination of new knowledge, and utilization of new knowledge for enhanced management and innovation performance (Donate & Sánchez de Pablo, 2015). KOL theory places emphasis on leadership facilitating knowledge processes, which ensures organizational success and enhanced innovation performance (Chughtai & Khan, 2024; Le & Do, 2023; Shamim et al., 2019). As per the knowledge-based theory, organizations achieve competitiveness through managing their capital for knowledge effectively, which remains an important strategic asset (Grant, 1996). KOL emphasizes the position of leadership for the generation, transfer, storage, and utilization of knowledge for enhanced innovation capacity (Uhl-Bien et al., 2007; Zia ud din et al., 2024). KOL seeks to manage organizational knowledge by acquisition, creation, sharing, transformation, and utilization. KOL leaders ensure learning and training to develop the know-how of employees and encourage systems for sharing, storage, and utilization of the same.

Information sharing, learning, and coordination for sustainable solutions lead to green practices under knowledge-based leadership (Bati & Ekowati, 2024). Entrepreneurial, transformational, and inclusive leadership lead to green innovation. Challenges facing organizations are met with investments in training, resources, rewards, and an enabling environment. Online technology, sustainability reporting, and stakeholder engagement change the relationship between green practices and knowledge-based leadership (Banmairuoy et al., 2022; Le & Do, 2023). The influence of knowledge-based leadership on sustainability becomes common, with organizations embarking on a wide array of green efforts. The education environment contributes highly to

sustainability by incorporating sustainability into the curriculum, training educators, sponsoring student research, and promoting collaboration.

Theories of leadership highlight the leadership roles in the management of resources and knowledge. Knowledge-oriented leaders create new forms of knowledge for improved performance in managing knowledge and innovation (Donate & Sánchez de Pablo, 2015). Knowledge-based leadership leads to environment-friendly practices through sharing and coordination for sustainability (Bati & Ekowati, 2024). Entrepreneurial, transformational, and inclusive leadership drive green innovation. Organizations address barriers with training, resource optimization, rewards, and a supportive climate. Trends such as digital technology, sustainability reporting, and stakeholder engagement link pro-environmental behavior with knowledge-based leadership (Banmairuoy et al., 2022; Le & Do, 2023). There is growing recognition of the importance of knowledge-based leadership for sustainability, promoting all kinds of green innovation initiatives. Education contributes to sustainability by mainstreaming sustainability into the school curriculum, educating and training educators, sponsoring school programs, and encouraging collaborative work.

It can be explained that there is a direct link between knowledge-oriented leadership (KOL) and improving employee performance and organizational success. In the context of this research, the researchers used the concept of green work engagement.

Hypothesis 1 : Knowledge-oriented leadership increase green work engagement.

Hypothesis 2 : Knowledge-oriented leadership increase green innovative work behavior

Green work engagement and green innovative work behavior

Only those who physically, mentally, and emotionally participate in work attain full engagement. Employees demonstrate heightened focus and connection (Lai et al., 2020). Leadership plays an important part in work engagement. Various studies on the relationships between leadership styles and work engagement have been conducted, including transformational (Buil et al., 2019) and empowering leadership, but there are limited studies on inclusive leadership. "Green work engagement" is the involvement of employees in sustainability activities. Employees who work green express readiness, concentration, inspiration, pride, and enthusiasm (Jnaneswar, 2024). They are in favor of sustainability and participate in green actions. Green work includes performing green behaviors, enhancing the environment, and proposing green initiatives (Aboramadan, 2022) employees' involvement with these activities has a significant impact on organizational environmental performance (Karatepe et al., 2022). Innovative work behavior (IWB) is the capability and intention to perform activities that advance, promote, and introduce new ideas or products within an organization. Innovative work behavior (IWB) is essential for organizations striving to adapt to changing market demands and enhance their competitive advantage. By fostering a culture that encourages creativity and supports new initiatives, companies can harness the full potential of their workforce, ultimately leading to improved sustainability efforts and organizational success. This approach not only empowers employees to contribute their ideas but also positions the organization to thrive in a dynamic business environment. As a result, embracing innovative work behavior can significantly impact an organization's long-term viability and growth. It encompasses success qualities such as creativity, proactiveness, risk-taking, and solving problems. Shahbaz et al., (2024) affirm that workers with high IWB improve innovation, support change, and increase competitiveness. According to Aboramadan, (2022) is able to improve green innovative work behavior significantly. Therefore, this study indicates:

Hypothesis 3: Green work engagement enhances green innovative work behavior

Green work engagement as mediation

Green work engagement (GWE) refers to the extent of an employee's cognitive, emotional, and physical involvement specifically directed toward environmentally sustainable practices at work. GWE embodies enthusiasm, dedication, and absorption in green initiatives, fostering proactive green behaviors within organizations. Recent studies highlight that while knowledge-oriented leadership (KOL) enhances green knowledge management and environmental initiatives, the mechanism through which KOL translates into tangible green innovative work behavior (GIWB) is less understood. Traditional mediation models often focus on knowledge sharing or organizational climate but have overlooked the crucial role of GWE as a psychological state that bridges leadership and green behavior outcomes.

Green work engagement can be described as employees being a part of sustainability and green practices in the workplace. Employees who are engaged exhibit commitment, attention, and interest in green work activities (Jnaneswar, 2024). They actively take part in green activities and contribute to sustainability (Aboramadan, 2022). They make suggestions for greening the business (Aboramadan, 2022). Employee involvement plays an important part in organizational greening (Karatepe et al., 2022). Complete engagement occurs when there is sustainable physical, mental, and emotional engagement in the work activities (Lai et al., 2020). Employees who are engaged have greater attentiveness and concentration. Literature supports that work engagement has an important stimulator with leadership (Aboramadan, 2022; Jnaneswar, 2024). Green work engagement bridges the gap between leadership and performance of the employees. In this study, GWE mediated the relationship between KOL and GIWB. So the interim answer can be compiled in this study is:

Hypothesis 4: Green working engagement mediated that intersessional relationship between KOL and GIWB

From the literature review and the above hypothesis, the following conceptual framework for the research was created:



Figure 1. Research framework

METHODS

The research employs a questionnaire to investigate the mediation of Green Work Engagement (GWE) in the relationship between Knowledge-Oriented Leadership (KOL) and Green Innovative Work Behavior (GIWB). Questionnaires were collected from Palangka Raya City environmentally trained small and medium entrepreneurs. A sample of 112 employees was selected with stratified random sampling for Partial Least Squares Structural Equation Modelling (PLS-SEM). KOL, GWE, GIWB, and demographic controls (age, gender, years of service) were measured on a 5-

point Likert response from "Strongly Disagree" to "Strongly Agree." Online questionnaires eliminated common method bias enabling honest and anonymous feedback.

Participants and procedures

Data was collected from employees working in micro and small businesses in Central Kalimantan, Indonesia. A total of 112 online questionnaires filled out by employees working at 32 SMEs were used for statistical analysis using Smart PLS 4.0. Respondents consisted of 24 (21.4%) men and 88 (78.6%) women, with an educational level of 6 (5.4%) middle school, 78 (69.6%) high school, 22 (19.7%) under graduate, 6 (5.4%) post graduate. The work experience of 77 (68.8%) was under 5 years, 25 (22.4%) 5.1 -15 years, 6 (5.4%) 16-20 years, and 4 (3.6%) over 21 years. Age of respondents: 77 (68.8%) under 20 years, 3 (2.7%) 21-25 years, 6 (5.4%) 26-30 years, 3 (2.7%), 6 (5.4%) 36-40 years, 6 (5.4%) 41-45 years, and 11 (9.8%) above 46 years. Based on training on environmentally friendly products, 80 (71.4%) had never participated and 34 (30.4%) had participated.

RESULTS AND DISCUSSION

Model evaluation in PLS is carried out using a two steps approach, namely two steps where evaluating the measurement model to obtain adequate requirements and continuing with structural model evaluation to evaluating model quality.

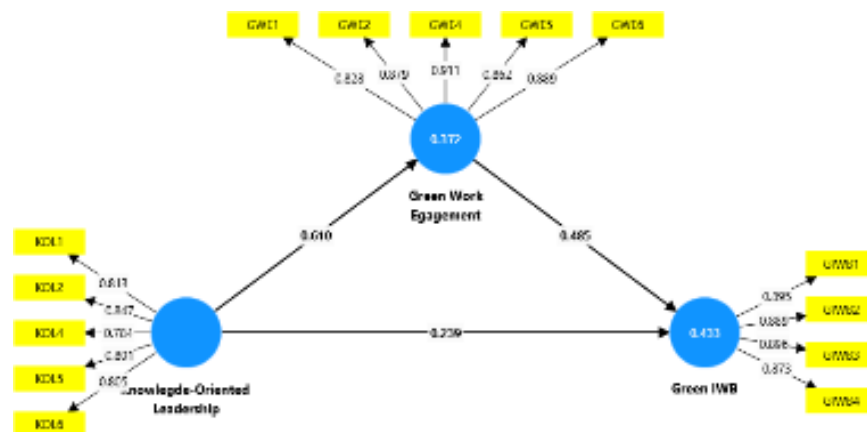


Figure 2. Research Model

The results of the outer model test are shown in table 1

Table 1. Result of Model Constructs

Construct	Indicator	Item reliability	Convergent validity		
		Loadings	CR	Alpha	AVE
Knowledge-oriented leadership	KOL1	0,813	0,869	0,871	0,657
	KOL2	0,847			
	KOL4	0,784			
	KOL5	0,801			
	KOL6	0,805			

Green Work Engagement	GWE1	0,828	0,923	0,926	0,764
	GWE2	0,879			
	GWE4	0,911			
	GWE5	0,862			
	GWE6	0,889			
	GIWB1	0,895			
Green Innovative Work Behavior	GIWB2	0,889	0,911	0,912	0,789
	GIWB3	0,896			
	GIWB4	0,873			

Note: CR = Composite Reliability; AVE = average variance extracted

Loading Factor (LF) or outer loading is the correlation between each measurement item and a variable. Rule of thumb, (Hair Jr et al., 2022), (Henseler et al., 2015) use $LF \geq 0,70$ as acceptable. The LF research results are all above 0,7. Internal consistency reliability shown by composite reliability (CR) is all with a value greater than 0,7. Apart from Composite Reliability, other measures that describe the level of reliability or internal consistency of reliability are Cronbach's Alpha and Rho A. The research results all have values above 0.7. Average variance extracted (AVE) is the average variation of each measurement item contained by the variable. How far as a whole the variables can explain variations in measurement items, research results show an AVE value $\geq 0,50$.

Tabel 2. Discriminant Validity of Constructs

Variables	GIWB	GWE	KOL
Discriminant Validity: Fornell–Larcker Criterion			
GIWB	0,888		
GWE	0,630	0,874	
KOL	0,534	0,610	0,810
Heterotrait–Monotrait Criterion (HTMT)			
GIWB			
GWE	0,685		
KOL	0,596	0,678	

Note: GIWB = Green Innovative Work Behavior, GWE = Green Work Engagement, KOL= Knowledge-Oriented Leadership.

We also report discriminative validity (DV) based on the Fornell-Larcker criterion and the Heterotrait-Monotrait criterion. The Fornell-Larcker criterion indicates that the square root of the AVE of each construct is higher than the highest correlation of the construct with other constructs in the model. The results show that the correlation between constructs has a greater value than other constructs. Compared with the Heterotrait-Monotrait (HTMT) correlation criterion ratio, it is better than the traditional approach on discriminative validity assessment due to much lower values of both the Fornell-Larcker criterion and cross-loading using 0.85 as the appropriate threshold level (Hair et al., 2017). Although this method is often used in applied research, it does not allow to reliably detect discriminative validity problems (Hair et al., 2017) that the HTMT measure is better used than the Fornell and lacker criterion methods in detecting discriminant validity. Therefore, Discriminant Validity (DV) is better assessed using HTMT (Henseler et al., 2015). DV is used to measure how other

constructs differ using empirical standards (Hair et al., 2017). To achieve a satisfactory level of DV, the results show that all constructs have HTMT scores < 0.90 , and the 97.5% bootstrap confidence interval shows all values are in good agreement, thus indicating that all research constructs (GIWB, GWE, KOL) are conceptually and empirically different from each other.

Table 3. Testing for Potential CMB Based on Full Collinearity

Construct	Inner VIF
Green Work_Egagement -> Green IWB	1,592
Knowlegde-Oriented _Leadership -> Green IWB	1,592
Knowlegde-Oriented _Leadership -> Green Work_Egagement	1,000

Note. VIF = variance inflation factor.

If inner VIF > 5 then there is suspicion of multicollinearity. However, in (Hair et al., 2017) a VIF value between 3-5 has the potential for multicollinearity to occur and the ideal is if VIF < 3 . Multicollinearity examination in this study with a VIF value < 3 means there is no multicollinearity.

Assessment of Structural Modeling Path Coefficients

Table 4. Path Coefficients for Direct Effects

Construct	Original sample	T statistics	P values	Report
Knowlegde-Oriented _Leadership -> Green Work_Egagement	0,610	9,152	0,000**	Supported
Knowlegde-Oriented _Leadership -> Green IWB	0,239	2,339	0,019**	Supported
Green Work_Egagement -> Green IWB	0,485	4,274	0,000**	Supported

Note P values** $< 0,01$, * $< 0,05$

The results in the table above show that our path coefficient is significant. The results show that all paths are statistically significant. The structural paths of the remaining constructs were significant based on two-tailed tests at $p < 0,05$. In Hypothesis 1, we predicted that KOL has a positive effect on GWE. As shown in the table above, this is statistically significant at ($t = 9,152$; $p = 0,000$). This shows that KOL directly influences GWE and the hypothesis is accepted. Hypothesis 2 also predicts that there is a positive and statistically significant relationship between KOL and GIWB. This was also shown to be determined at ($t = 2,339$, $p = 0,019$) which supports the effect proposed in Hypothesis 2; therefore, KOL is able to increase the GIWB of the accepted hypothesis. Hypothesis 3 also predicted that GWE statistically and significantly has a positive effect on GIWB. This was also shown to be determined at ($t = 4,274$, $p = 0,000$) which supports the effect proposed in Hypothesis 3; therefore, GWE is able to increase GIWB, the hypothesis is accepted.

Table 5. Confidence Intervals 95%

	Original sample	2.5%	97.5%
Knowlegde-Oriented _Leadership -> Green IWB	0,239	0,043	0,443
Knowlegde-Oriented _Leadership -> Green Work_Egagement	0,610	0,473	0,734
Green Work_Egagement -> Green IWB	0,485	0,258	0,700

In a 95% confidence interval, the influence of KOL on GIWB lies between 0.043 and 0.443, explaining that when the KOL style is enhanced with various activities open for consultation, facilitation, intellectual stimulation, providing examples, and support, its influence on environmentally friendly innovative work behavior will increase up to 0.443. In a 95% confidence interval, the influence of KOL increases by 0.743 on GWE, and GWE is able to increase GIWB by 0.700.

Table 6. Path Coefficients for Indirect Effects

Hypotheses	Original sample	T statistics	P values	Report
KOL → GWE → GIWB	0,296	3,772	0,000	Supported

Note: P values < 0,05

Table 5 above shows that the t value and p value respectively ($t = 3,772$; $p = 0.000$); Therefore, the estimate that GWE mediate the relationship between KOL and GIWB is proven to be positive and significant, this means that the hypothesis is accepted.

To see whether the influence of exogenous latent variables on endogenous latent variables has a mediating effect, namely with the value recommended by Cohen in (Ogbeibu et al., 2021) namely values of 0.175 (high mediation), 0.075 (medium mediation), and 0.01 (low mediation).

Table 7. Statistik Upsilon (v)

Mediation	upsilon (v)	mediation effect
KOL → GWE → GIWB	0,021	low mediation influence

Based on the mediation value above $GHRM \rightarrow GWE \rightarrow GIWB$ with a value of 0.082 (mediation influence leads to medium), and $KOL \rightarrow GWE \rightarrow GIWB$ with a value of 0.011 (mediation influence leads to low), According Ogbeibu, et al, (2021) is 0.01 (low mediation influence), 0.075 (medium mediation influence) and 0.175 (high mediation influence).

Evaluation of model quality can be seen from several measures, namely:

The research results show that R square for GIWB is 0.423 (42,3%) meaning that the influence of KOL and GWE to GIWB is leads to moderate. R square, according to (Latan et al., 2017), R square values of 0.75, 0.50 and 0.25 mean substantive (high), moderate and weak influence. Another opinion is according to Chin (1998) in (Henseler et al., 2016) where the R square value is 0.67 (high), 0.33 (moderate), 0.19 (weak). The results show that Q^2 for KOL is 0,000, GWE is 0,274 and GIWB is 0,332. This means that KOL have a low values, and GWE and GIWB have moderate values. Q square is how much the model's predictive accuracy (PLS path model's predictive accuracy) is described in Q Square redundancy or Q square, which is a measure that describes how well the model has predictive relevance. If Q square is greater than 0, it shows that the exogenous variable has predictive relevance to the constructed endogenous variable. This value is obtained through a procedure called the blindfolding procedure. In Hair et al (2019), if Q square has a value of 0 (low), 0.25 (moderate), 0.50 (high) then the meaning of Q Square is predictive accuracy. F Square effect size measure, which describes how big the influence of the variables in the structural model is. The results showed that the influence of KOL on GWE was 0.592 (large), KOL on GIWB was 0.063 (low), and GWE on GIWB were 0,260 (medium). The interpretation of the F Square effect size value in (Hair Jr et al., 2022) and (Henseler et al., 2015) is 0.02 (low) 0.15 (medium) 0.35 (large). The effect size value of F Square only explains the magnitude of the direct effect.

Based on the Standardized Root Mean Square Residual (SRMR), which is a tool for measuring model fit, the average value of all standardized residuals is $0,062 < 0,008$, meaning it has a good model fit value. The condition used is that an SRMR value below 0.08 indicates a fit model, while an SRMR value between 0,08 to 0,10 is still acceptable.

CONCLUSION

This study provides empirical support that shows that organizational leaders with a knowledge-oriented leadership (KOL) style enhance the green work engagement (GWE) of employees, which in turn fosters the green innovative work behavior (GIWB) of the employees. To the extent that leaders prioritize the sharing and control of information in an environmentally responsible manner, employees will tend to exhibit vigor, commitment, and proactive involvement in green activities. Green work engagement exists as an affective and psychological medium interlinking leadership styles and innovative behaviors. However, with an increase in the involvement of employees in green activities, the employees play a greater part in the sustainable innovation activities of the firm. The mediation model investigated in this study shows that not only does KOL have a direct impact on GIWB, but the KOL also has a statistically significant influence on GIWB through the mediation of GWE, thus reasserting the significance of employee involvement in facilitating green innovation.

The evidence provided here supports the claim that good leadership plays an important part in the development of an environmental sustainability-oriented culture. By actively managing and promoting sustainable information dissemination and learning activities, leaders develop an organizational culture that encourages workers to participate in innovative problem-solving with the goal of creating environmentally beneficial solutions. This study clarifies the implications for small and medium-sized enterprises (SMEs) operating in places like Central Kalimantan. Knowledge leadership is an important stimulator of the implementation of environmentally friendly practices by employees and, thereby, highlights the important position of information sharing and continuous education within the firm. Sustainable work practices act not only as a mediating element but also as an inherent part of the construction of a new and innovative sustainability model for organizations.

Finally, the findings highlight that green work engagement has the potential to significantly impact the behavior of employees and hence allow organizations to balance economic pressures with environmental responsibility through proper leadership initiatives and supportive human resource practices. The study confirms the interconnectedness of KOL, GWE, and GIWB and supports the implementation of integrated management practices enhance employee engagement and encourage innovation in the environment of a green workplace. This offers a clear blueprint for future organizational practice aimed at sustainability and competitiveness.

The practical implications of this paper are designed to enhance leadership practice in the area of sustainability. Organizations are encouraged to implement a style of leadership that emphasizes knowledge sharing. Leaders who actively develop, share, and implement new ideas can inspire their workforce to develop innovative and ecologically friendly solutions. Practically, businesses can invest in leadership development programs that center on knowledge sharing and the promotion of innovative thinking, particularly in the context of green or sustainable initiatives. The main mediator found in this research is green work engagement, which promotes the value of employees being emotionally, physically, and mentally invested in sustainable practices. By fostering an environment in which employees are more 'in the zone' when it comes to sustainability—such as

through involvement in green initiatives or sustainability competitions—businesses can improve overall green innovative work behavior. This suggests that regular webinars, discussion forums, and participation in green initiatives are practical methods of improving this engagement. Overall, this paper presents methods in which businesses can combine leadership development, human resource practices, and employee engagement strategies to develop a more sustainable and innovative organizational culture. These practical implications provide a clear set of guidelines for businesses interested in introducing sustainability initiatives that go beyond minimum environmental compliance.

Limitiation and Future Research

The sample might not generalize to the larger population, making generalizations challenging. To focus on Central Kalimantan might lead to biased results and restricted applicability. This cross-sectional design limits causal inference on green innovative work behavior, green HRM, and knowledge-oriented leadership. Long-term longitudinal data to examine these relationships over time would not be available. Future research needs larger sample sizes, larger geographical areas, varied data collection approaches, and additional variables to account for the leadership-to-green-innovation relationship.

REFERENCES

- Aboramadan, M. (2022). The effect of green HRM on employee green behaviors in higher education: the mediating mechanism of green work engagement. *International Journal of Organizational Analysis*, 30(1), 7–23. <https://doi.org/10.1108/IJOA-05-2020-2190>
- Al-Ayed, S. (2024). Green innovation influenced by employee innovative work behavior via moderating role of innovative leaderships. *Cogent Business and Management*, 11(1). <https://doi.org/10.1080/23311975.2024.2393741>
- Augi, G. G., Sambung, R., & Panjaitan, O. W. O. (2020). Pengaruh Gaya Kepemimpinan Demokratik Terhadap Kinerja Karyawan Dengan Menggunakan Motivasi Sebagai Variabel Moderator. *Jurnal Manajemen Sains Dan Organisasi*, 1(1), 1–15. <https://doi.org/10.52300/jmso.v1i1.2366>
- Bakker, A. B., & Albrecht, S. (2018). Work engagement: current trends. *Career Development International*, 23(1), 4–11. <https://doi.org/10.1108/CDI-11-2017-0207>
- Bakker, A. B., & Leiter, M. P. (2010). *Work Engagement A Handbook of Essential Theory and Research*. Psychology Press.
- Banmairuroy, W., Kritjaroen, T., & Homsombat, W. (2022). The effect of knowledge-oriented leadership and human resource development on sustainable competitive advantage through organizational innovation's component factors: Evidence from Thailand 's new S- curve industries. *Asia Pacific Management Review*, 27(3), 200–209. <https://doi.org/10.1016/j.apmr.2021.09.001>
- Bati, F. A. S., & Ekowati, D. (2024). The Influence of Knowledge-Oriented Leadership on Innovative Work Behavior in SMEs with Knowledge Sharing as a Mediator. *Eduvest-Journal of Universal Studies*, 4(4), 2025–2039. <http://eduvest.greenvest.co.id>
- Buil, I., Martínez, E., & Matute, J. (2019). Transformational leadership and employee performance: The role of identification, engagement and proactive personality. *International Journal of Hospitality Management*, 77(May), 64–75. <https://doi.org/10.1016/j.ijhm.2018.06.014>

- Chughtai, M. S., & Khan, H. S. ud din. (2024). Knowledge oriented leadership and employees' innovative performance: a moderated mediation model. *Current Psychology*, 43(4), 3426–3439. <https://doi.org/10.1007/s12144-023-04502-7>
- Deo, L., Sambung, | Roby, & Panjaitan, O. (2025). Entrepreneurial Leadership Towards Innovative Work Behavior in MSMEs Through Creative Self Efficacy as a Mediation. *Jurnal Manajemen Sains Dan Organisasi*, Vol 6 (No. 1, April 2025), 6777. <https://doi.org/https://doi.org/10.52300/jmso.v6i1.20172>
- Donate, M. J., & Sánchez de Pablo, J. D. (2015). The role of knowledge-oriented leadership in knowledge management practices and innovation. *Journal of Business Research*, 68(2), 360–370. <https://doi.org/10.1016/j.jbusres.2014.06.022>
- Dumont, J., Shen, J., & Deng, X. (2017). Effects of Green HRM Practices on Employee Workplace Green Behavior: The Role of Psychological Green Climate and Employee Green Values. *Human Resource Management*, 56(4), 613–627. <https://doi.org/10.1002/hrm.21792>
- Grant, R. M. (1996). TOWARD A KNOWLEDGE-BASED THEORY OF THE FIRM. In *Strategic Management Journal* (Vol. 17).
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, Marko. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)* (second edition). Sage.
- Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) Third Edition* (Third Edition). SAGE Publications.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2016). Testing measurement invariance of composites using partial least squares. *International Marketing Review*, 33(3), 405–431. <https://doi.org/10.1108/IMR-09-2014-0304>
- Huang, Y.-C., Gong, T.-J., & Shih, L.-T. (2024). Examining the impact of green human resource management on green innovative work behavior: A multilevel analysis. *Corporate Social Responsibility and Environmental Management*, 31(6), 6401–6418. <https://doi.org/https://doi.org/10.1002/csr.2932>
- Jnaneswar, K. (2024). Demystifying the relationships among green HRM, green work engagement, green innovation and environmental performance: a serial mediation model. *Social Responsibility Journal*. <https://doi.org/10.1108/SRJ-08-2023-0457>
- 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. <https://doi.org/10.1108/IJCHM-10-2021-1242>
- Lai, F. Y., Tang, H. C., Lu, S. C., Lee, Y. C., & Lin, C. C. (2020). Transformational Leadership and Job Performance: The Mediating Role of Work Engagement. *SAGE Open*, 10(1). <https://doi.org/10.1177/2158244019899085>
- Latan, H., Hair, J. F. J., & Richard Noonan Editors, J. (2017). *Partial Least Squares Path Modeling* (Second Edition). Springer.
- Le, P. B., & Do, Y. H. (2023). Stimulating innovation performance through knowledge-oriented leadership and knowledge sharing: the moderating role of market turbulence. *International Journal of Innovation Science*. <https://doi.org/10.1108/IJIS-08-2022-0166>

- Naqshbandi, M. M., & Jasimuddin, S. M. (2018). Knowledge-oriented leadership and open innovation: Role of knowledge management capability in France-based multinationals. *International Business Review*, 27(3), 701–713. <https://doi.org/10.1016/j.ibusrev.2017.12.001>
- Ogbeibu, S., Jabbour, C. J. C., Gaskin, J., Senadjki, A., & Hughes, M. (2021). Leveraging STARA competencies and green creativity to boost green organisational innovative evidence: A praxis for sustainable development. *Business Strategy and the Environment*, 30(5), 2421–2440. <https://doi.org/10.1002/bse.2754>
- Purnomo, E. C., Sambung, R., & Syamsudin, A. (2022). Leadership style in improving innovative work behavior, organizational culture, and organizational citizenship behavior as mediation. *Jurnal Inovasi Ekonomi*, 07, 171–182. <https://doi.org/10.22219/jiko.v7i02.22052>
- Rehman, U. U., & Iqbal, A. (2020). Nexus of knowledge-oriented leadership, knowledge management, innovation and organizational performance in higher education. *Business Process Management Journal*, 26(6), 1731–1758. <https://doi.org/10.1108/BPMJ-07-2019-0274>
- Sambung, R. (2020). Pelatihan dan Kepemimpinan Visioner dalam meningkatkan Kreativitas Pegawai di Kalimantan Tengah. *Matrik : Jurnal Manajemen, Strategi Bisnis Dan Kewirausahaan*, 169. <https://doi.org/10.24843/matrik:jmbk.2020.v14.i02.p04>
- Sambung, R. (2022). The role of leadership style in improving organizational performance. *Jurnal Inovasi Ekonomi*, 07, 127–140. <https://doi.org/10.22219/jiko.v7i02.22050>
- Shahbaz, M. H., Naseem, M. A., Battisti, E., & Alfiero, S. (2024). The effect of green intellectual capital and innovative work behavior on green process innovation performance in the hospitality industry. *Journal of Intellectual Capital*. <https://doi.org/10.1108/JIC-02-2023-0034>
- Shamim, S., Cang, S., & Yu, H. (2019). Impact of knowledge oriented leadership on knowledge management behaviour through employee work attitudes. *International Journal of Human Resource Management*, 30(16), 2387–2417. <https://doi.org/10.1080/09585192.2017.1323772>
- Uhl-Bien, M., Marion, R., & McKelvey, B. (2007). Complexity Leadership Theory: Shifting leadership from the industrial age to the knowledge era. *Leadership Quarterly*, 18(4), 298–318. <https://doi.org/10.1016/j.leaqua.2007.04.002>
- Yu, T., Abbas, J., Rizvi, R. A., & Najam, H. (2024). Role of environment-driven CSR, green servant leadership, and green dynamic capabilities in firm green innovation: Evidence from manufacturing industry. *Environment, Development and Sustainability*. <https://doi.org/10.1007/s10668-024-05201-4>
- Zia ud din, M., Yuan yuan, X., Ullah Khan, N., & Estay, C. (2024). The impact of public leadership on collaborative administration and public health delivery. *BMC Health Services Research*, 24(1). <https://doi.org/10.1186/s12913-023-10537-0>