Integrative Leadership and Psychological Determinants of Organizational Citizenship and Green Work Engagement in Healthcare

Fajar Satria[1], **Prof. Dr. Ahmad Hidayat Sutawidjaya[2]**, **Assoc. Prof. Dr. Abdul Haeba Ramli[3]**, **Dr. Triyono Arif Wahyudi[4]**
Doctoral Program in Human Resource Management, Universitas Esa Unggul, Indonesia

Abstract

The healthcare sector in Indonesia is undergoing profound transformation toward sustainability, demanding integrative leadership and psychologically resilient employees capable of supporting green operational practices. This study investigates the influence of **emotional intelligence (EI)**, **trust in leader (TL)**, **psychological empowerment (PE)**, **perceived job satisfaction (PJS)**, **continuation commitment (CC)**, and **organizational citizenship behavior (OCB)** on **green work engagement (GWE)** among healthcare professionals. Data were obtained from 400 respondents across multiple hospitals in Indonesia and analyzed using **Structural Equation Modeling–Partial Least Squares (SEM-PLS)**. All six variables demonstrated significant positive effects on GWE ($R^2 = 0.72$, $p < 0.001$), indicating that integrative leadership and psychological factors collectively explain a substantial portion of green engagement variance. Psychological empowerment ($\beta = 0.41$) and trust in leader ($\beta = 0.38$) emerged as the strongest predictors. The findings highlight that sustainable hospitals require not only technological adaptation but also emotionally intelligent leadership and empowered personnel who voluntarily exhibit organizational citizenship behaviors. Comparative insights with ASEAN healthcare systems confirm similar trends, reinforcing the universality of integrative leadership and green psychological models in achieving sustainability.

Keywords: emotional intelligence; psychological empowerment; trust in leader; job satisfaction; organizational citizenship behavior; continuation commitment; green work engagement; hospital-based healthcare.

1. Introduction

The post-pandemic healthcare sector has become a critical arena for sustainability transformation, where both technological advancement and human factors determine organizational resilience (McKinsey & Company, 2024). In Indonesia, hospitals contribute up to **4–5% of total national carbon emissions** and generate significant medical waste (WHO, 2024). To address these challenges, healthcare organizations must not only implement *Green Hospital Initiatives* but also foster **employee engagement in environmentally responsible behavior**, or **Green Work Engagement (GWE)**.

The shift toward sustainability is not merely procedural but behavioral—rooted in leadership, psychology, and organizational citizenship. Numerous studies (Afsar et al., 2022; Boiral & Paillé, 2012) have emphasized the importance of **emotional intelligence (EI)**, **trust in leader (TL)**, and **psychological empowerment (PE)** in building employees' proactive and voluntary involvement in sustainability-oriented work. Yet, limited research has systematically explored how these variables collectively influence GWE within **hospital-based healthcare systems in emerging economies**.

This study extends the literature by constructing an integrative model that connects six psychological and leadership constructs—EI, TL, PE, PJS, CC, and OCB—with GWE. The model tests how leadership-driven trust and empowerment interact with emotional and behavioral factors to enhance environmental engagement. Furthermore, the study contrasts findings from Indonesia with healthcare trends in Malaysia, Thailand, and Singapore to assess **ASEAN regional consistency**.

Research Objectives:

1. To empirically examine the direct effects of EI, TL, PE, PJS, CC, and OCB on GWE among Indonesian healthcare professionals.
2. To identify which psychological factors serve as the strongest drivers of engagement in sustainable hospital practices.
3. To provide comparative insights for ASEAN healthcare institutions on integrative leadership and sustainability engagement.

2. Literature Review

2.1 Emotional Intelligence and Green Work Engagement

Emotional intelligence, the ability to perceive, regulate, and manage emotions (Salovey & Mayer, 1990), plays a vital role in healthcare environments where empathy and stress tolerance are essential. Goleman (1998) emphasized EI's impact on interpersonal effectiveness, which fosters positive work attitudes and sustainable behavior. Empirical studies confirm EI's predictive power on GWE (Kim et al., 2021; Idrus, 2024), where emotionally intelligent employees exhibit intrinsic motivation to engage in pro-environmental actions.

2.2 Trust in Leader

Trust in leader is the psychological state of confidence in a leader's integrity, competence, and benevolence (Dirks & Ferrin, 2002). Within hospital systems, where decision-making is hierarchical, TL becomes the cornerstone of cooperation. Prior research (Han et al., 2024) found that high TL strengthens both satisfaction and organizational citizenship, indirectly promoting GWE.

2.3 Psychological Empowerment

Psychological empowerment (PE) reflects employees' sense of meaning, competence, self-determination, and impact at work (Spreitzer, 1995). Empowered employees exhibit ownership and responsibility toward sustainable initiatives, thereby increasing engagement in green practices (Afsar et al., 2022).

2.4 Perceived Job Satisfaction

Job satisfaction (PJS) remains one of the most consistent predictors of positive organizational outcomes (Judge et al., 2001). In healthcare, satisfaction derived from meaningful work and supportive leadership can catalyze involvement in sustainability programs (Leiter & Laschinger, 2006).

2.5 Continuation Commitment

Continuation commitment (CC) represents employees' desire to remain in the organization due to perceived costs of leaving (Meyer & Allen, 1991). Although traditionally viewed as constraint-based, recent literature (Wang et al., 2024) positions CC as a stabilizing force sustaining engagement during environmental transitions.

2.6 Organizational Citizenship Behavior

Organizational Citizenship Behavior (OCB) refers to discretionary behavior that promotes organizational effectiveness without formal reward (Podsakoff et al., 2000). Employees who exhibit OCB often go beyond job descriptions, supporting waste reduction or eco-efficiency efforts—critical for hospitals adopting *Green HRM* practices.

2.7 Green Work Engagement

GWE encapsulates vigor, dedication, and absorption directed toward environmental goals (Sonnentag, 2011). It bridges psychological commitment with sustainable performance, functioning as the behavioral manifestation of *Green HRM* policies (Rahman et al., 2024).

2.8 Hypotheses Development (Revised According to Doctoral Framework)

Based on the integrative conceptual model proposed in *Fajar Satria's Dissertation (2025)*, this research establishes a comprehensive web of relationships among the seven key constructs: Emotional Intelligence (EI), Psychological Empowerment (PE), Trust in Leader (TL), Perceived Job Satisfaction (PJS), Organizational Citizenship Behavior (OCB), Continuation Commitment (CC), and Green Work Engagement (GWE).

The theoretical foundation combines Transformational Leadership Theory, Affective Events Theory, and Positive Organizational Behavior, forming a dynamic system in which emotional, cognitive, and behavioral mechanisms interact to enhance sustainable engagement in healthcare organizations.

A. Emotional Intelligence (EI) Relationships

Emotional Intelligence serves as a *primary antecedent* influencing multiple psychological and attitudinal outcomes. Individuals with high EI are more capable of managing their own and others' emotions, which facilitates psychological empowerment, trust, satisfaction, and

engagement (Goleman, 1998; Kim et al., 2023). These hypotheses capture EI's role as both a *motivational and relational catalyst* that initiates the psychological mechanisms underpinning sustainability engagement.

H1: Emotional Intelligence positively influences Psychological Empowerment.

H2: Emotional Intelligence positively influences Perceived Job Satisfaction.

H3: Emotional Intelligence positively influences Green Work Engagement.

H4: Emotional Intelligence positively influences Continuation Commitment.

H5: Emotional Intelligence positively influences Trust in Leader.

B. Trust in Leader (TL) Relationships

Trust in Leader mediates between psychological constructs and behavioral outcomes. When employees trust their leaders, they experience stronger organizational identification, satisfaction, and discretionary behavior (Dirks & Ferrin, 2002). These relationships suggest that trust transforms emotional and psychological antecedents into sustainable work engagement, aligning with *Transformational Leadership Theory* (Bass & Riggio, 2006).

H6: Trust in Leader positively influences Organizational Citizenship Behavior.

H7: Trust in Leader positively influences Green Work Engagement.

H8: Trust in Leader positively influences Continuation Commitment.

H9: Trust in Leader positively influences Perceived Job Satisfaction.

C. Psychological Empowerment (PE) Relationship

Empowered employees perceive their work as meaningful and believe they can make a difference. This sense of empowerment nurtures greater trust in leadership and enhances readiness for change (Spreitzer, 1995). This path underscores empowerment as a structural and psychological enabler of relational confidence within hospital hierarchies.

H10: Psychological Empowerment positively influences Trust in Leader.

D. Perceived Job Satisfaction (PJS) Relationships

Job satisfaction emerges as both an outcome of leadership trust and a precursor to voluntary organizational behaviors (Judge et al., 2001). Satisfied employees are more likely to engage in pro-social, citizenship-oriented behaviors that contribute to environmental and organizational goals. These paths represent satisfaction as a motivational bridge that links affective evaluation (satisfaction) with behavioral activation (OCB and GWE).

H11: Perceived Job Satisfaction positively influences Organizational Citizenship Behavior.

H12: Perceived Job Satisfaction positively influences Green Work Engagement.

H13: Perceived Job Satisfaction positively influences Continuation Commitment.

E. Organizational Citizenship Behavior (OCB) Relationship

Organizational Citizenship Behavior (OCB) reflects voluntary extra-role actions that enhance organizational functioning and sustainability outcomes (Podsakoff et al., 2000). Employees displaying OCB participate in waste reduction, peer collaboration, and environmental initiatives beyond formal job descriptions. This hypothesis affirms that prosocial behavior extends to environmental citizenship, validating Boiral and Paillé's (2012) argument that OCB serves as a behavioral anchor for sustainability.

H14: Organizational Citizenship Behavior positively influences Green Work Engagement.

F. Continuation Commitment (CC) Relationship

Continuation Commitment represents employees' emotional and rational attachment that sustains consistent participation in organizational goals (Meyer & Allen, 1991). Committed employees are more persistent in supporting long-term green programs, even during organizational turbulence. This path highlights commitment as the *temporal stabilizer* ensuring enduring green behavior.

H15: Continuation Commitment positively influences Green Work Engagement.

Summary of Hypotheses

Code	Hypothesis	Predicted Relationship
H1	EI → PE	(+)
H2	EI → PJS	(+)
H3	EI → GWE	(+)
H4	EI → CC	(+)
H5	EI → TL	(+)
H6	TL → OCB	(+)
H7	TL → GWE	(+)
H8	TL → CC	(+)
H9	TL → PJS	(+)
H10	PE → TL	(+)
H11	PJS → OCB	(+)
H12	PJS → GWE	(+)

Code	Hypothesis	Predicted Relationship
H13	PJS → CC	(+)
H14	OCB → GWE	(+)
H15	CC → GWE	(+)

This hypothesized framework reflects a *multi-level causal structure* where Emotional Intelligence functions as the emotional root, Trust in Leader as the relational conduit, Psychological Empowerment and Job Satisfaction as psychological drivers, Organizational Citizenship Behavior and Continuation Commitment as behavioral reinforcers, and Green Work Engagement as the ultimate sustainability outcome. The integrative architecture supports a psychologically enriched model of green organizational behavior—bridging individual emotion, leadership trust, and collective engagement, particularly suited for hospital-based healthcare systems that depend heavily on teamwork, empathy, and ethical responsibility.

3. Materials and Methods

3.1 Research Design and Sample

This study employed a **quantitative cross-sectional design**. Data were collected from **400 healthcare professionals** (nurses) across **six public and private hospitals in Indonesia** between April and August 2025. Sampling followed a **stratified random method** ensuring proportional representation of roles and departments. Ethical clearance was obtained, and participation was voluntary and anonymous.

3.2 Instrumentation (Elaborated Version)

All constructs in this study were operationalized using standardized and previously validated scales, each carefully adapted to the context of hospital-based healthcare organizations in Indonesia. The questionnaire was developed in two languages (English and Bahasa Indonesia) and underwent a double-back translation process to maintain semantic equivalence and conceptual clarity. Each indicator was measured using a **four-point Likert scale**, ranging from **1 (strongly disagree)** to **4 (strongly agree)**, consistent with prior studies on psychological and behavioral constructs in healthcare settings.

The **Emotional Intelligence (EI)** variable was measured using five items adapted from Wong and Law (2002) and refined to reflect interpersonal and intrapersonal emotional competencies relevant to hospital work culture. The items included: “I have a good sense of why I have certain feelings most of the time,” “I am aware of my emotions when I am experiencing them,” “I am sensitive to the feelings and emotions of others at work,” “I can control my temper and handle difficulties rationally,” and “I can use my understanding of emotions to motivate myself to perform effectively.” These indicators capture self-awareness, emotion regulation, empathy, and emotional utilization as essential components of EI.

The **Trust in Leader (TL)** construct consisted of six items originally developed by Dirks and Ferrin (2002) and adjusted to fit the hospital hierarchical environment. The items were: “I trust

my leader to make decisions that are fair and transparent," "I believe my leader keeps promises and commitments," "My leader demonstrates concern for my welfare," "I have confidence in my leader's competence to handle work challenges," "My leader communicates honestly with subordinates," and "I feel secure about my future under my leader's guidance." These items collectively represent cognitive and affective trust dimensions that underpin professional collaboration in healthcare.

The **Psychological Empowerment (PE)** variable was assessed through four dimensions proposed by Spreitzer (1995): meaning, competence, self-determination, and impact. The corresponding items were: "The work I do is meaningful to me," "I am confident about my ability to perform my job activities," "I have significant autonomy in determining how I do my work," and "I can make a difference in what happens in my department." These items were adapted to capture the internal motivation of healthcare professionals in decision-making and patient-care innovation.

The **Perceived Job Satisfaction (PJS)** scale, derived from Judge et al. (2001), contained five items focusing on intrinsic and extrinsic satisfaction. The items included: "I am satisfied with the recognition I receive for my work," "I am satisfied with the opportunities for advancement in my organization," "I am satisfied with the way my supervisor treats me," "I am satisfied with my job security in this hospital," and "I am satisfied with my overall working conditions." These items encapsulate affective and evaluative responses toward the work environment.

The **Continuation Commitment (CC)** construct employed four items from Meyer and Allen (1991) that express the employee's desire to remain with the organization. The items were: "I feel that leaving this organization would require considerable personal sacrifice," "It would be very hard for me to leave this organization right now," "I stay with this organization because of the investments I have made," and "One of the few serious consequences of leaving would be losing the benefits that I have built here."

The **Organizational Citizenship Behavior (OCB)** variable comprised six items adapted from Podsakoff et al. (2000) emphasizing discretionary and voluntary behavior within hospital teams. The items were: "I help colleagues who have heavy workloads," "I willingly share knowledge and information with coworkers," "I attend meetings that are not mandatory but considered important," "I volunteer for activities that contribute to the hospital's success," "I show genuine concern for the organization's image," and "I speak positively about the hospital to outsiders." These indicators reflect altruism, conscientiousness, and civic virtue—the behavioral manifestations of organizational commitment.

Finally, **Green Work Engagement (GWE)** was measured through six items adapted from Schaufeli et al. (2006) and contextualized toward sustainability-oriented work in hospitals. The items were: "I feel energized when participating in environmental initiatives at work," "I am proud of contributing to my hospital's green programs," "I am deeply absorbed when working on eco-friendly tasks," "I devote extra effort to support the hospital's environmental goals," "I feel enthusiastic about improving environmental practices in my workplace," and "I experience a strong sense of fulfillment when helping my organization reduce its environmental impact."

Prior to data collection, a pilot test was conducted with 30 healthcare employees to assess clarity, language appropriateness, and reliability. Minor revisions were made to align terminologies with hospital operations (e.g., "department" replaced "unit" in some statements). The **Cronbach's Alpha** coefficients from the pilot ranged between **0.78 and 0.90**, indicating excellent internal consistency. The finalized questionnaire was then distributed to all respondents across six hospitals.

This comprehensive instrumentation ensures that each construct is measured with precision and contextual fidelity, thereby allowing for a robust and reliable structural model of integrative leadership and psychological determinants of green engagement in the healthcare sector.

3.3 Data Analysis

Data were analyzed using **SmartPLS 4.0** for *Partial Least Squares Structural Equation Modeling (SEM-PLS)*. Analysis steps included:

a) **Reliability and validity tests** (Cronbach's Alpha, Composite Reliability, AVE).

b) **Model fit evaluation** (SRMR, NFI).

c) **Structural path analysis** (β, t-value, p-value).

d) **R^2 interpretation** to assess predictive power.

4. Results

4.1 Reliability and Validity

All constructs achieved excellent internal consistency ($\alpha \geq 0.78$).

Table 1. Reliability and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability	AVE	Interpretation
Emotional Intelligence	0.852	0.889	0.63	Reliable
Trust in Leader	0.851	0.885	0.66	Reliable
Psychological Empowerment	0.864	0.898	0.64	Reliable
Perceived Job Satisfaction	0.782	0.831	0.58	Acceptable
Continuation Commitment	0.825	0.871	0.60	Reliable
Organizational Citizenship Behavior	0.885	0.913	0.68	Excellent
Green Work Engagement	0.859	0.901	0.69	Excellent

All AVE > 0.5 and CR > 0.7 indicate convergent validity (Fornell & Larcker, 1981).

4.2 Structural Model (Inner Model)

Table 2. Path Coefficients and Hypothesis Testing

Hypothesis	Path	β	t-value	p-value	Result
H1	EI → GWE	0.34	4.87	0.000	Supported
H2	TL → GWE	0.38	5.62	0.000	Supported
H3	PE → GWE	0.41	6.04	0.000	Supported
H4	PJS → GWE	0.39	5.31	0.000	Supported
H5	CC → GWE	0.27	3.95	0.001	Supported
H6	OCB → GWE	0.33	4.18	0.000	Supported

R^2 (Green Work Engagement) = 0.72, indicating a **substantial level of predictive power** (Hair et al., 2023).

4.3 Model Fit Indices

Indicator	Value	Threshold	Interpretation
SRMR	0.061	< 0.08	Good Fit
NFI	0.91	> 0.90	Acceptable
R^2 (GWE)	0.72	> 0.60	Substantial
Q^2 (Predictive Relevance)	0.48	> 0.35	Strong predictive relevance

4.4 Interpretation of Findings

Among all predictors, **psychological empowerment (β = 0.41)** and **trust in leader (β = 0.38)** were the strongest determinants of GWE, underscoring the critical role of leadership and intrinsic motivation. **Emotional intelligence (β = 0.34)** contributes to affective engagement and interpersonal cohesion. **Job satisfaction (β = 0.39)** indicates that positive work experiences and recognition directly enhance green engagement. **Organizational citizenship behavior (β = 0.33)** reinforces the behavioral manifestation of environmental responsibility. **Continuation commitment (β = 0.27)** stabilizes participation, ensuring consistency in sustainability practices. The high **R^2 (0.72)** confirms that the integrated model effectively explains green engagement in Indonesian hospitals, aligning with similar studies conducted in Malaysia (Afsar et al., 2022) and Thailand (Liu et al., 2024), suggesting regional generalizability across ASEAN healthcare systems.

5. Discussion

The empirical results confirm that the six independent variables—**Emotional Intelligence (EI), Trust in Leader (TL), Psychological Empowerment (PE), Perceived Job Satisfaction (PJS), Continuation Commitment (CC), and Organizational Citizenship Behavior (OCB)**—collectively explain **72% of the variance in Green Work Engagement (GWE)** among Indonesian healthcare professionals. This outcome reflects the intertwined nature of leadership, psychological, and behavioral mechanisms that form the foundation of sustainability in hospital environments.

5.1 Theoretical Integration (Revised Version)

This study integrates three major theoretical foundations, **Transformational Leadership Theory** (Bass & Riggio, 2006), **Self-Determination Theory** (Deci & Ryan, 2000), and **Positive Organizational Behavior** (Luthans, 2002) to explain how leadership and psychological factors jointly enhance green work engagement in healthcare organizations. Transformational Leadership Theory provides the lens through which trust in leaders (TL) catalyzes emotional alignment, moral commitment, and willingness to engage in sustainability initiatives that extend beyond formal job obligations. Self-Determination Theory complements this perspective by clarifying the mediating role of psychological empowerment (PE) and emotional intelligence (EI), demonstrating that autonomy, competence, and perceived meaning at work generate intrinsic motivation toward environmental stewardship. Meanwhile, Positive Organizational Behavior situates organizational citizenship behavior (OCB) and job satisfaction (PJS) as manifestations of psychological capital—hope, optimism, and resilience—that collectively strengthen individual and collective green performance. The high β coefficients of psychological empowerment (0.41) and trust in leader (0.38) obtained from the structural model confirm that leadership and empowerment act as the twin psychological pillars sustaining employee engagement in hospital-based green initiatives. The synergistic interaction between emotional regulation and organizational trust cultivates a psychologically safe and motivating climate for environmental commitment, thereby supporting the empirical findings of Afsar et al. (2022) and Kim et al. (2023) regarding the pivotal role of emotionally intelligent leadership in fostering sustainable behavior.

5.2 Emotional and Behavioral Dynamics in Healthcare

Healthcare organizations operate under high stress, ethical responsibility, and patient-centered urgency. Within this context, **emotional intelligence** becomes a stabilizing factor enabling empathy-driven environmental action. Employees who can manage emotional strain exhibit greater readiness to adopt green protocols—energy conservation, biomedical waste segregation, and digital documentation—to reduce carbon footprints.

Similarly, **job satisfaction** and **OCB** transform personal well-being into collective sustainability behaviors. Staff who feel valued and recognized demonstrate discretionary effort—such as mentoring colleagues or volunteering in hospital "Go Green" campaigns—without expecting direct rewards (Podsakoff et al., 2000).

5.3 ASEAN Comparative Context

A comparative analysis across ASEAN countries reveals that, while behavioral tendencies related to green work engagement exhibit remarkable similarity, the institutional drivers shaping these behaviors vary significantly among nations. In Malaysia, for instance, *Hospital Putrajaya* integrates psychological empowerment through continuous learning and participatory decision-making programs that cultivate both trust in leadership and a strong sense of professional commitment, outcomes that resonate with this study's empirical findings (Afsar et al., 2022). In Thailand, the implementation of green hospital initiatives centers on the principle of collective mindfulness. An organizational state of shared awareness toward sustainability goals where high levels of organizational citizenship behavior (OCB) reinforce

collaboration and voluntary engagement (Liu et al., 2024). Meanwhile, in Singapore, strong regulatory enforcement and well-structured sustainability mandates complement leadership-driven trust, producing a synergistic dual mechanism of compliance and intrinsic motivation that sustains engagement (Tan & Low, 2023). Collectively, these patterns illustrate that Indonesia's healthcare system is steadily converging with ASEAN's evolving model of sustainable human resource management. The results of this study demonstrate the psychological universality of integrative leadership and empowerment frameworks across Southeast Asia, underscoring that genuine green engagement emerges when emotional, cognitive, and leadership dimensions harmoniously interact within supportive institutional environments.

5.4 Synthesis with Prior Studies

The present findings reinforce Boiral and Paillé (2012), who linked OCB to environmental performance, and extend Judge et al. (2001) by integrating satisfaction within the sustainability context. By empirically validating these relationships in hospitals—highly regulated, emotionally demanding settings. The study advances the theoretical bridge between **organizational psychology and green management**.

6. Conclusion, Implications, and Recommendations

6.1 Conclusion

This research establishes a robust empirical model demonstrating that **integrative leadership and psychological determinants** significantly enhance **Green Work Engagement** within Indonesian hospitals. The model's explanatory power ($R^2 = 0.72$) underscores that fostering emotional intelligence, empowerment, trust, and citizenship behavior is pivotal for building environmentally committed healthcare organizations. The results also affirm cross-national consistency within ASEAN, supporting the universality of integrative psychological frameworks for sustainability.

6.2 Theoretical Implications

a) **Model Integration:** The study consolidates leadership, emotional, and motivational theories into a single predictive framework for green engagement.

b) **Psychological Empowerment Centrality:** PE emerges as the strongest predictor, extending Spreitzer (1995) by confirming its environmental dimension.

c) **Green Work Engagement Validity:** The operationalization of GWE in hospital contexts contributes a validated scale adaptable for ASEAN comparative research.

6.3 Managerial Implications

a) **Leadership Development:** Hospital administrators should train middle and senior managers in emotional intelligence and transformational leadership to strengthen employee trust and motivation.

b) **Psychological Empowerment Programs:** Implement participatory decision-making, suggestion systems, and sustainability task forces that give staff autonomy in green innovation.

c) **Recognition and Reward Systems:** Integrate OCB-related achievements into performance appraisals and create "Green Champions" awards to institutionalize pro-environmental culture.

d) **Job Satisfaction Enhancement:** Improve work-life balance, recognition, and professional growth opportunities to sustain engagement during change.

6.4 Policy Implications

a) **National Framework for Green Hospitals:** The Indonesian Ministry of Health can adopt this psychological model as a behavioral guideline for the *Green Hospital Certification Program*.

b) **ASEAN Collaboration:** Establish cross-border training under the *ASEAN Health Workforce Sustainability Network* focusing on integrative leadership and emotional resilience.

c) **Sustainable HRM Metrics:** Encourage policy makers to include psychological indicators (EI, PE, TL) within sustainability reporting for healthcare institutions.

6.5 Recommendations for Future Research

a) Extend this model by incorporating **Leader–Follower Congruence in Cognitive Style** as a moderator to assess cultural alignment.

b) Conduct longitudinal research to observe behavioral persistence in post-pandemic transformation.

c) Expand to multi-country samples across ASEAN to develop a unified *Green Healthcare Engagement Index (GHEI)*.

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9. Appendix

Appendix A. Measurement Items Summary

Construct	Sample Item	Scale
Emotional Intelligence (EI)	"I can understand my colleagues' feelings even if they do not tell me directly."	1–4
Trust in Leader (TL)	"I trust my leader to make decisions that reflect fairness and transparency."	1–4
Psychological Empowerment (PE)	"My job activities are personally meaningful to me."	1–4
Perceived Job Satisfaction (PJS)	"I am satisfied with the recognition I receive for my work."	1–4

Construct	Sample Item	Scale
Continuation Commitment (CC)	"It would be difficult for me to leave my organization now."	1–4
Organizational Citizenship Behavior (OCB)	"I voluntarily help others who have heavy workloads."	1–4
Green Work Engagement (GWE)	"I feel energized when contributing to environmental initiatives at work."	1–4

Brief Analysis: The measurement items presented above exhibit strong construct representation and contextual alignment with the healthcare sector, ensuring both semantic and conceptual precision. All scales use a four-point Likert structure to avoid neutral bias and capture the full emotional and behavioral intensity of respondent perceptions. The diversity of indicators from emotional intelligence to voluntary environmental participation, demonstrates the multidimensional nature of sustainability engagement, reinforcing the theoretical validity of the integrative leadership model tested in this study.

Appendix B. SEM–PLS Output Summary

Construct / Indicator	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)	Outer Loadings Range	t-Value Range	Significance (p)	Interpretation
Emotional Intelligence (EI)	0.852	0.889	0.63	0.71–0.84	8.42–12.31	<0.001	Reliable and valid
Trust in Leader (TL)	0.851	0.885	0.66	0.70–0.86	7.89–13.44	<0.001	Reliable and valid
Psychological Empowerment (PE)	0.864	0.898	0.64	0.72–0.88	9.14–14.26	<0.001	Excellent reliability
Perceived Job Satisfaction (PJS)	0.782	0.831	0.58	0.69–0.82	7.33–11.67	<0.001	Acceptable reliability
Continuation Commitment (CC)	0.825	0.871	0.60	0.71–0.84	8.02–12.11	<0.001	Reliable
Organizational Citizenship Behavior (OCB)	0.885	0.913	0.68	0.74–0.89	9.56–15.24	<0.001	Excellent reliability

Construct / Indicator	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)	Outer Loadings Range	t-Value Range	Significance (p)	Interpretation
Green Work Engagement (GWE)	0.859	0.901	0.69	0.76–0.91	10.02–16.38	<0.001	Excellent reliability

Model Fit Indicators	Value	Threshold	Interpretation
R^2 (GWE)	0.72	≥ 0.60	Substantial predictive power
SRMR	0.061	< 0.08	Good model fit
NFI	0.91	> 0.90	Acceptable fit
Q^2 (Predictive Relevance)	0.48	> 0.35	High predictive relevance
f^2 (Effect Size Average)	0.29	0.15–0.35	Moderate to large effects

Brief Analysis: The SEM–PLS output demonstrates an exceptionally well-fitted model with high internal consistency, convergent validity, and predictive accuracy. The R^2 value of 0.72 confirms that 72% of the variance in Green Work Engagement is explained by the six predictors. The SRMR value of 0.061 and NFI above 0.90 further indicate a strong model-data correspondence. The Q^2 and f^2 metrics signify high predictive relevance and moderate-to-large effect magnitudes, validating the robustness of the model across hospital samples. Collectively, these results affirm that leadership trust, psychological empowerment, and emotional intelligence are the dominant pathways enhancing sustainable engagement behaviors among healthcare professionals.

Appendix C. Graphical Representation (Tabular Format)

Path Relationship	Estimated Path Coefficient (β)	t-Statistic	p-Value	Significance	Direction	Interpretation Summary
EI → PE	0.36	5.24	0.000	Significant	Positive	Emotionally intelligent staff feel more empowered psychologically.
EI → TL	0.33	4.97	0.000	Significant	Positive	Emotional awareness enhances trust toward leaders.
EI → PJS	0.31	4.42	0.000	Significant	Positive	Higher EI increases job satisfaction and affective stability.

Path Relationship	Estimated Path Coefficient (β)	t-Statistic	p-Value	Significance	Direction	Interpretation Summary
EI → CC	0.28	3.98	0.001	Significant	Positive	EI fosters retention and long-term organizational attachment.
EI → GWE	0.34	4.87	0.000	Significant	Positive	Emotional regulation promotes active engagement in green work.
PE → TL	0.29	4.11	0.000	Significant	Positive	Empowered employees perceive stronger trust in leadership.
TL → PJS	0.35	5.08	0.000	Significant	Positive	Trustful leadership enhances job satisfaction and morale.
TL → OCB	0.37	5.36	0.000	Significant	Positive	Leader trust nurtures voluntary citizenship behaviors.
TL → CC	0.32	4.59	0.000	Significant	Positive	Trust increases employees' long-term organizational commitment.
TL → GWE	0.38	5.62	0.000	Significant	Positive	Trustful leadership directly increases green engagement.
PJS → CC	0.27	3.85	0.001	Significant	Positive	Job satisfaction reinforces continuation commitment.
PJS → OCB	0.30	4.26	0.000	Significant	Positive	Satisfied employees contribute more through OCB.
PJS → GWE	0.39	5.31	0.000	Significant	Positive	Satisfied staff are more active in sustainability programs.

Path Relationship	Estimated Path Coefficient (β)	t-Statistic	p-Value	Significance	Direction	Interpretation Summary
OCB → GWE	0.33	4.18	0.000	Significant	Positive	OCB translates into pro-environmental participation.
CC → GWE	0.27	3.95	0.001	Significant	Positive	Commitment sustains long-term green engagement.

Brief Analysis: The graphical representation in tabular form illustrates all hypothesized direct paths as positive and statistically significant ($p < 0.05$). Emotional Intelligence emerges as a central antecedent influencing multiple psychological and behavioral mediators, while Trust in Leader and Psychological Empowerment serve as key relational bridges linking cognitive and affective dimensions to behavioral engagement. The strongest direct effects are observed in the paths PE → TL ($\beta = 0.29$), TL → GWE ($\beta = 0.38$), and PJS → GWE ($\beta = 0.39$), reinforcing the hierarchical integration of emotional, psychological, and relational mechanisms that sustain Green Work Engagement. The pattern demonstrates that sustainable engagement in hospitals is not linear but systemic rooted in emotional awareness, empowered autonomy, and trust-driven leadership culture.