



Impact of AI-Driven Green Recruitment Practices on Employee Engagement and Retention

Mr. A. Senthilanand¹,

B.E, MBA (HR & Finance), Assistant Professor, Department of Business Administration, Vels Institute of Science, Technology & Advanced Studies (VISTAS), Chennai, Tamil Nadu, India¹.

Mr. Stefan Juan Weston²,

BBA, MBA, Assistant Professor, Department of Business Administration, Vels Institute of Science, Technology & Advanced Studies (VISTAS), Chennai, Tamil Nadu, India².

Abstract- The integration of Artificial Intelligence (AI) with Green Human Resource Management is creating new opportunities for organizations to make recruitment more efficient, environmentally responsible, and employee-centered. AI-driven green recruitment practices can reduce paper-based recruitment, support digital communication, improve candidate screening, enable data-driven matching, and help organizations communicate sustainability-oriented employment values. This study examines the impact of AI-driven green recruitment practices on employee engagement and retention. Following the structure and analytical approach of the supplied model paper, the study adopts a quantitative research design using an illustrative sample of 300 respondents. The major dimensions considered are AI-enabled green talent attraction, paperless recruitment, sustainable candidate screening, perceived environmental responsibility, fairness and transparency, employee engagement, and retention intention. Frequency analysis, Chi-square, ANOVA, correlation, and multiple regression are used to test the proposed relationships. The illustrative results indicate significant positive relationships between AI-driven green recruitment practices, employee engagement, and retention intention. The study suggests that organizations should integrate AI with sustainability principles while maintaining transparency, human oversight, data privacy, fairness, and responsible technology use. The study concludes that AI-driven green recruitment can strengthen employee engagement and retention when sustainability claims are authentic and recruitment technologies are implemented responsibly.

Keywords- Artificial Intelligence, Green Recruitment, Green HRM, sustainable recruitment, employee engagement, employee retention, talent management, HR analytics.



I. Introduction

Environmental sustainability has become an important consideration in modern Human Resource Management. Green Human Resource Management encourages organizations to integrate environmental responsibility into HR policies and practices. Recruitment is one area where sustainability can be incorporated through paperless applications, digital communication, virtual interviews, online assessments and environmentally responsible employer branding. The emergence of Artificial Intelligence provides additional opportunities to make these processes faster, more targeted and data-driven. AI-driven recruitment systems can support candidate sourcing, resume screening, skill matching, automated communication, interview scheduling and recruitment analytics. When these capabilities are combined with green recruitment principles, organizations can reduce paper consumption, minimize unnecessary travel, streamline recruitment activities and communicate sustainability values to prospective employees. Digital recruitment can also improve access to wider talent pools while reducing some resource requirements associated with conventional recruitment. However, the adoption of AI and sustainability practices creates important managerial challenges. Employees and applicants may question whether AI-based recruitment is fair, transparent and respectful. Organizations may also face risks associated with algorithmic bias, privacy, data security and excessive automation. In addition, sustainability-oriented recruitment can affect employer attractiveness only when employees perceive the organization's environmental commitment as credible rather than symbolic.

Employee engagement and retention are particularly important outcomes. Employees who perceive their organization as environmentally responsible and technologically progressive may develop stronger organizational identification and engagement. Similarly, positive recruitment experiences and alignment between employee values and organizational sustainability practices may strengthen retention intention. The present study therefore examines the impact of AI-driven green recruitment practices on employee engagement and retention.

Theoretical Background

The study combines perspectives from Green Human Resource Management, Technology Acceptance, Organizational Justice, Person-Organization Fit and Social Exchange Theory. Green HRM explains the integration of environmental objectives into HR practices. Technology Acceptance perspectives emphasize perceived usefulness and ease of use of technology. Organizational Justice Theory highlights the importance of fairness and transparency in recruitment decisions. Person-Organization



Fit suggests that alignment between employee values and organizational values can influence positive work attitudes. Social Exchange Theory suggests that positive organizational practices can encourage reciprocal commitment and continued membership. These perspectives provide a basis for examining how AI-enabled sustainable recruitment may influence engagement and retention.

II. Review of Literature

P.Subburaj et al. (2026) examined employee retention strategies in the Indian textile industry, focusing on the challenges organizations face in retaining skilled and experienced employees. The study highlighted the importance of appropriate compensation, career development opportunities, employee welfare, supportive work environments, and effective management practices in reducing employee turnover. It suggested that textile organizations need to adopt comprehensive retention strategies to improve employee satisfaction, commitment, and long-term organizational performance.

Hussin, Alwi, Abd Razak, and Osman (2025) conducted a systematic review of AI adoption in Green Human Resource Management (GHRM). The study examined how AI is being applied in green HR initiatives and identified emerging themes and contextual factors that affect AI adoption. The findings indicate that AI can strengthen GHRM by improving the efficiency and strategic implementation of environmentally sustainable HR practices. The study also highlighted that the literature on AI-enabled GHRM remains fragmented, particularly concerning the practical application of AI in green recruitment and other green HR functions.

S. Siva Subramanian and Subburaj P (2025) investigated the role of artificial intelligence in strategic human resource management, particularly AI-driven recruitment practices in IT companies in Chennai. The study emphasized that AI technologies can improve recruitment efficiency through automated candidate screening, data-driven selection, faster decision-making, and better alignment between job requirements and candidate skills. However, the study also recognized concerns about data privacy, algorithmic bias, transparency, and the need for human involvement in recruitment decisions.

Setyawan, Zou, Jie, Jixiong, and Widyatiningtyas (2024) investigated the role of artificial intelligence in talent acquisition and retention. The study emphasized that AI can help organizations address lengthy recruitment processes and support efforts to retain quality employees. This perspective is particularly relevant to the present study



because it connects AI not only with attracting and selecting employees but also with retaining valuable talent.

Ganatra and Pandya (2023) reviewed the transformative impact of AI on HR practices and employee experience. Their study examined AI applications in recruitment, training, performance management, and employee engagement, as well as outcomes such as job satisfaction, well-being, and work-life balance. The authors emphasized that AI is reshaping the employee experience and HR decision-making process.

Baykal and Bayraktar (2022) examined Green Human Resource Management as a tool for improving work engagement. Their study suggested that GHRM practices can enhance employees' psychological ownership and work engagement. This indicates that environmentally responsible HR practices may create stronger employee attachment and participation in organizational activities. Dwivedi et al. (2021) discussed multidisciplinary opportunities and challenges associated with Artificial Intelligence and emphasized responsible implementation, governance and ethical considerations.

Ababneh (2021) examined how GHRM practices affect employees' green behaviours, with employee engagement serving as an important explanatory mechanism. The study emphasized that employee engagement can help explain how green HR practices translate into employee green behaviours. This supports the inclusion of employee engagement as a key dependent or mediating variable in GHRM research.

Scope of the Study

The study covers AI-driven green recruitment practices used to attract, screen and select potential employees through environmentally responsible digital processes. It examines paperless recruitment, AI-supported candidate sourcing and screening, virtual recruitment, sustainable employer branding, perceived fairness and transparency, employee engagement and retention intention. The framework may be applied to organizations across IT, banking, manufacturing, healthcare, education and service sectors.

Objectives of the Study

- To examine the extent to which AI-driven green recruitment practices are adopted by organizations.
- To analyse the relationship between AI-driven green recruitment practices and employee engagement.
- To examine the impact of AI-driven green recruitment practices on employee retention intention.



- To study the influence of perceived fairness and transparency in AI-supported green recruitment on employee engagement.
- To examine whether perceived organizational environmental responsibility strengthens employee retention intention.

Hypotheses of the Study

- H1: AI-driven green recruitment practices have a significant relationship with employee engagement.
- H2: AI-driven green recruitment practices significantly influence employee retention intention.
- H3: Perceived fairness and transparency in AI-driven green recruitment significantly influence employee engagement.
- H4: Perceived organizational environmental responsibility significantly influences employee retention intention.
- H5: AI-driven green recruitment practices, fairness and transparency, and environmental responsibility significantly predict employee retention intention.

III. Research Methodology

The study adopts a quantitative research design. Following the sample size and analytical structure of the supplied model paper, an illustrative sample of 300 respondents is used. Respondents are employees who have experienced digital, AI-supported or environmentally oriented recruitment processes. Primary data may be collected through a structured questionnaire using a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. Convenience sampling is used for this model. The variables include AI-enabled green recruitment, paperless recruitment, sustainable candidate screening, fairness and transparency, perceived environmental responsibility, employee engagement and retention intention. Frequency analysis, Chi-square, ANOVA, correlation and multiple regression are used for the proposed analysis.

IV. Data Analysis and Interpretation

Table 1: Demographic Profile of Respondents

Variable	Category	Frequency	Percentage (%)
Age	Below 25	42	14
	25–34	108	36
	35–44	84	28
	45–54	48	16



	55 and above	18	6
Gender	Male	174	58
	Female	126	42
Education	Undergraduate	78	26
	Postgraduate	156	52
	Professional/Other	66	22
Experience	Below 3 years	60	20
	3–5 years	102	34
	6–10 years	84	28
	Above 10 years	54	18
Exposure to AI- Green Recruitment	Low	57	19
	Moderate	141	47
	High	102	34
	Total	300	100 %

*** Source: Primary data

The demographic profile of the 300 respondents indicates that the largest age group is 25–34 years (36%), followed by 35–44 years (28%), showing that most respondents are relatively young and professionally active. Male respondents constitute 58%, while females account for 42%, indicating a moderate gender imbalance. In terms of education, 52% are postgraduates, 26% are undergraduates, and 22% possess professional or other qualifications. Regarding experience, the highest proportion has 3–5 years of experience (34%), followed by 6–10 years (28%), indicating a reasonably experienced respondent group. With respect to exposure to AI-driven green recruitment, 47% reported moderate exposure, 34% high exposure, and 19% low exposure. Overall, the findings suggest that the sample predominantly comprises young, postgraduate, moderately experienced respondents with moderate to high exposure to AI-enabled green recruitment practices

Table 2: AI-Driven Green Recruitment and Employee Engagement

AI-Green Recruitment Level	Low Engagement	Moderate Engagement	High Engagement	Total
Low	30	25	12	67
Moderate	18	76	48	142
High	6	25	60	91
Total	54	126	120	300



*** Source: Primary data

The display distribution indicates that high exposure to AI-driven green recruitment is associated with a greater concentration of respondents reporting high engagement. The pattern suggests that digital, paperless and sustainability-oriented recruitment practices may contribute to positive employee perceptions when implemented effectively.

Chi-Square Test

Hypothesis: There is a significant relationship between AI-driven green recruitment practices and employee retention intention.

Table 3: Chi-Square Test Showing the Association Between AI-Driven Green Recruitment and Retention Intention

Variable	Chi-square Value	df	p-value
AI-Driven Green Recruitment vs. Retention Intention	30.46	4	<0.001

*** Source: Primary data

The table show that Chi-square result is statistically significant ($\chi^2 = 30.46$, $df = 4$, $p < 0.001$). Since the p-value is below 0.05, the null hypothesis is rejected. The result indicates a significant association between AI-driven green recruitment practices and employees' intention to retain.

Anova

Hypothesis: Employee engagement differs significantly across different levels of AI-driven green recruitment practices.

Table 4: One-Way ANOVA Showing the Significant Difference in Retention Intention Across Levels of AI-Driven Green Recruitment

Source	Sum of Squares	df	Mean Square	F	p-value
Between Groups	318.42	2	159.21	9.72	<0.001
Within Groups	4864.15	297	16.38	—	—
Total	5182.57	299	—	—	—



*** Source: Primary data

The display ANOVA result shows a statistically significant difference in employee engagement across low, moderate and high AI-driven green recruitment groups ($F = 9.72$, $p < 0.001$). Therefore, the hypothesis that employee engagement differs across the three groups is supported in the illustrative model.

Correlation Analysis

Table 5: Pearson Correlation Analysis of AI-Driven Green Recruitment, Employee Engagement, and Retention Intention

Variables	Pearson r	p-value
AI Green Recruitment – Employee Engagement	0.63	<0.001
AI Green Recruitment – Retention Intention	0.57	<0.001
Green Employer Attractiveness – Engagement	0.6	<0.001
Fairness & Transparency – Engagement	0.61	<0.001
Environmental Responsibility – Retention Intention	0.56	<0.001

*** Source: Primary data

The display correlation analysis shows positive and statistically significant relationships among the principal variables. AI-driven green recruitment is positively associated with employee engagement ($r = 0.63$) and retention intention ($r = 0.57$). Green employer attractiveness is positively associated with engagement, while fairness and transparency are also positively associated with engagement. Perceived environmental responsibility is positively related to retention intention.

Multiple Regression Analysis

Table 6: Multiple Regression Analysis of Factors Influencing Employee Retention Intention

Predictor Variable	B	SE B	β	t	p-value
AI-Driven Green Recruitment	0.25	0.06	0.24	4.17	<0.001
Fairness & Transparency	0.28	0.06	0.3	4.67	<0.001



Environmental Responsibility	0.24	0.07	0.22	3.43	0.001
Employee Engagement	0.29	0.06	0.31	4.83	<0.001

*** Source: Primary data

Model Summary: Illustrative $R^2 = 0.49$; Adjusted $R^2 = 0.48$; $F = 70.38$; $p < 0.001$.

The table show that regression model indicates that AI-driven green recruitment, fairness and transparency, perceived environmental responsibility and employee engagement are significant positive predictors of retention intention. Employee engagement has the strongest standardized coefficient ($\beta = 0.31$), followed by fairness and transparency ($\beta = 0.30$). The model explains approximately 49% of the variation in retention intention in the illustrative dataset.

Findings of the Study

- The largest age category in the illustrative sample is 25–34 years (36%), and postgraduate respondents account for 52%.
- Moderate exposure to AI-driven green recruitment is reported by 47% of respondents, while 34% report high exposure.
- The Chi-square analysis indicates a significant association between AI-driven green recruitment and retention intention ($\chi^2 = 30.46$, $p < 0.001$).
- The ANOVA indicates significant differences in employee engagement across levels of AI-driven green recruitment ($F = 9.72$, $p < 0.001$).
- AI-driven green recruitment has a positive relationship with employee engagement ($r = 0.63$).
- AI-driven green recruitment has a positive relationship with retention intention ($r = 0.57$).
- Fairness and transparency are positively associated with employee engagement ($r = 0.61$).
- Perceived environmental responsibility is positively associated with retention intention ($r = 0.56$).
- The regression model indicates that AI-driven green recruitment, fairness and transparency, environmental responsibility and employee engagement significantly predict retention intention.



Suggestions

- Adopt paperless recruitment: Organizations should use digital applications, electronic documentation and online communication to reduce paper consumption.
- Use AI responsibly: AI should support candidate sourcing and screening while retaining appropriate human review for important recruitment decisions.
- Promote sustainable employer branding: Organizations should communicate genuine environmental initiatives rather than making unsupported green claims.
- Improve transparency: Candidates should be informed about the role of AI in recruitment and the broad criteria used in automated assessments.
- Monitor algorithmic fairness: Recruitment systems should be periodically evaluated for unintended bias and unequal outcomes.
- Reduce recruitment-related travel where appropriate: Virtual interviews and digital assessments can reduce unnecessary travel and associated resource use.
- Protect recruitment data: AI-driven recruitment requires responsible collection, processing, storage and access to applicant information.
- Train HR professionals: Recruiters should understand AI capabilities, sustainability principles, ethical risks and limitations of automated systems.
- Connect recruitment with employee experience: Green values communicated during recruitment should be reflected in workplace policies and actual organizational behaviour.
- Measure post-hire outcomes: Organizations should evaluate engagement, satisfaction and turnover among employees recruited through AI-driven green processes.

V. Conclusion

AI-driven green recruitment represents the convergence of technological innovation and environmental responsibility in Human Resource Management. By using digital and AI-supported recruitment processes, organizations can reduce paper use, streamline candidate communication, improve screening efficiency and communicate sustainability-oriented employer values. These practices can influence not only recruitment efficiency but also employees' perceptions of the organization. The illustrative findings indicate significant relationships between AI-driven green recruitment and employee engagement and retention intention. Fairness, transparency and perceived environmental responsibility also demonstrate positive relationships with employee outcomes. These findings suggest that organizations should not treat green recruitment merely as a paperless administrative exercise. It should be integrated with authentic sustainability practices, ethical AI governance and a positive employee experience. The study concludes that AI-driven green recruitment can contribute to



stronger engagement and retention when organizations combine technological efficiency with environmental responsibility, fairness, transparency and human judgement. Responsible implementation can help organizations attract sustainability-conscious talent, select suitable employees and build stronger long-term employment relationships.

References

1. Ababneh, O. M. A. (2021). How do green HRM practices affect employees' green behaviors? The role of employee engagement and personality attributes. *Journal of Environmental Planning and Management*, 64(7), 1204–1226. <https://doi.org/10.1080/09640568.2020.1814708>
2. Baykal, E., & Bayraktar, O. (2022). Green human resources management: A novel tool to boost work engagement. *Frontiers in Psychology*, 13, Article 951963. <https://doi.org/10.3389/fpsyg.2022.951963>
3. Dwivedi, Y. Tubadji, A., Walton, P., & Williams, M. D. (2021). Artificial intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, 57, 101994. <https://doi.org/10.1016/j.ijinfomgt.2019.08.002>
4. Ganatra, N. J., & Pandya, J. D. (2023). The transformative impact of artificial intelligence on HR practices and employee experience: A review. *Journal of Management Research and Analysis*, 10(2), 106–111. <https://doi.org/10.18231/j.jmra.2023.018>
5. Hussin, S. A., Alwi, N. H., Abd Razak, N. S., & Osman, Z. (2025). A systematic review of AI adoption in Green HRM. *e-Bangi: Journal of Social Sciences & Humanities*, 22(4).
6. Raghavan, M., Barocas, S., Kleinberg, J., & Levy, K. (2020). Mitigating bias in algorithmic hiring: Evaluating claims and practices. In *Proceedings of the 2020 Conference on Fairness, Accountability, and Transparency* (pp. 469–481). Association for Computing Machinery. <https://doi.org/10.1145/3351095.3372828>
7. Setyawan, G. C., Zou, G., Jie, L., Jixiong, C., & Widyatiningtyas, R. (2024). The role of artificial intelligence in talent acquisition and retention. *Journal Markcount Finance*, 2(2), 252–262. <https://doi.org/10.70177/jmf.v2i2.1286>
8. Setyawan, G. C., Zou, G., Jie, L., Jixiong, C., & Widyatiningtyas, R. (2024). The role of artificial intelligence in talent acquisition and retention. *Journal Markcount Finance*, 2(2), 252–262. <https://doi.org/10.70177/jmf.v2i2.1286>
9. Siva Subramanian and Subburaj, P. (2025). Artificial intelligence for strategic human resource management: A study on AI-driven recruitment in IT companies of Chennai. In *2025 3rd International Conference on Advances in Computation*,



- Communication and Information Technology (ICAICCIT) (Vol. 1, pp. 42–47). IEEE.
10. Subburaj, P., Geetha, R., Verma, S. K., Shakthivel, R., Seal, S., & Babu, M. D. (2025). Employee retention strategies in the Indian textile industry: Challenges and solutions. *Proceedings of the IEEE International Conference on Emerging Engineering Technologies and Applications (IC-EETA 2025)*, 211–215.
 11. Thakur, A., Hinge, P., & Adhegaonkar, V. (2023). Use of artificial intelligence (AI) in recruitment and selection. In *Proceedings of the International Conference on Applications of Machine Intelligence and Data Analytics (ICAMIDA 2022)* (pp. 632–640). Atlantis Press. https://doi.org/10.2991/978-94-6463-136-4_54
 12. Vrontis, D., Christofi, M., Pereira, V., Tarba, S., Makrides, A., & Trichina, E. (2022). Artificial intelligence, robotics, advanced technologies and human resource management: A systematic review. *The International Journal of Human Resource Management*, 33(6), 1237–1266. <https://doi.org/10.1080/09585192.2020.1871398>