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Research Article

The Role of Artificial Intelligence in Promoting Employee Workplace Green Behaviors: A Systematic Analysis

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ABSTRACT

This systematic literature review explores the intersection of artificial intelligence (AI) and employee workplace green behaviors, examining how AI interventions can enhance sustainable practices in organizations. The paper addresses three primary research questions: (1) What role does AI play in promoting employee workplace green behaviors? (2) How is AI currently applied to enhance green behaviors within organizational settings? and (3) What are the barriers or enablers for AI-driven interventions in fostering green behaviors? A comprehensive search strategy was employed, identifying key studies on AI applications in sustainability and employee behaviors. The findings suggest that AI can drive green behaviors through smart resource management, behavior tracking, and decision-making support, while highlighting barriers such as technological limitations and organizational resistance. The paper concludes with recommendations for organizations seeking to leverage AI for sustainability and discusses the theoretical and practical implications of AI in fostering environmentally responsible workplace practices.

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Introduction

The increasing urgency of addressing climate change and promoting environmental sustainability has led organizations worldwide to prioritize green practices in their operations. These practices, often referred to as employee workplace green behaviors, include actions such as energy conservation, waste reduction, and adopting eco-friendly transportation options. Employee participation in these behaviors is crucial for organizations to meet their sustainability goals and corporate social responsibility (CSR) objectives (Schultz, 2019). Evidence from both international and Philippine contexts underscores the importance of cultivating such behaviors among employees, as they directly influence organizational sustainability outcomes. For instance, in the Philippines, companies like Ayala Corporation and the San Miguel Group have implemented green initiatives to reduce energy consumption and promote waste segregation, leading to positive environmental impacts. Internationally, organizations like Google and IBM have adopted AI-driven initiatives to enhance employee participation in sustainability efforts, providing evidence of AI's potential to drive green

behaviors (Gaur, Afaq, Arora, & Khan, 2023). However, promoting these behaviors requires more than traditional incentives or programs; it necessitates the use of innovative tools and technologies.

Artificial intelligence (AI) offers a wide range of capabilities that can support and amplify environmentally responsible workplace practices. AI technologies, such as machine learning, data analytics, and natural language processing, allow organizations to track and analyze individual employee behaviors in real time, provide personalized recommendations, and optimize resource management processes (Akter, 2024). These capabilities hold significant promise for organizations seeking to reduce their environmental footprint and improve operational efficiency. In the Philippines, AI-powered tools are gradually being integrated into green initiatives, such as energy management systems and waste reduction strategies, to enhance sustainability efforts in industries like manufacturing and logistics (Rosales, Magsumbol, Palconit, Culaba, & Dadios, 2020). Globally, AI has been used to develop smart grids that optimize energy use (Kapoor et al., 2022), and to automate waste management, reducing landfill waste by up to 40% (Nguyen et al., 2020). Despite these promising applications, there is a gap in understanding how AI influences employee behaviors specifically in the context of sustainability. This study seeks to fill this gap by systematically reviewing existing literature on AI's role in promoting employee green behaviors. It will explore how AI is used to influence workplace behaviors, identify the barriers and enablers to AI adoption, and assess the effectiveness of AI-driven interventions in fostering sustainability within organizational settings.

Literature Review

Employee Workplace Green Behaviors

Employee workplace green behaviors refer to voluntary actions taken by employees that contribute to the organization's environmental goals. These behaviors include energy conservation, waste reduction, sustainable product usage, and eco-friendly commuting practices (Fapohunda, Genty, & Olanipekun, 2021). Studies have demonstrated that organizational culture, leadership support, and individual motivations significantly influence the adoption of green behaviors (Nguyen et al., 2020). For example, organizations with a culture that values sustainability are more likely to see their employees engaging in green practices, such as reducing energy consumption or opting for recycling programs (Lozano, 2015). In the Philippine context, companies like PLDT and the Ayala Group have led initiatives to incorporate sustainability into their employee engagement strategies, showing the benefits of aligning business objectives with environmental responsibility (Sarmiento et al., 2021). While some employees naturally adopt sustainable behaviors, others require external incentives, clear expectations, or the right tools to engage effectively in green actions (Nguyen et al., 2020). Providing these resources is essential for fostering long-term green behavior in the workplace.

AI has recently emerged as a tool to promote employee workplace green behaviors, particularly through technologies like smart sensors, predictive analytics, and real-time feedback systems. A study examined the factors influencing the adoption and implementation of these strategies, such as resource availability and digital literacy (Guillen & Lim, 2023). These AI-powered solutions help organizations track and manage resource use, encouraging employees to engage in more sustainable practices. For instance, smart systems that monitor energy usage can provide feedback to employees, motivating them to reduce consumption during peak hours (Gaur, Afaq, Arora, & Khan, 2023). In organizations, AI applications automate resource allocation and waste management, further contributing to sustainability goals (Akter, 2024). For example, AI-driven systems in workplaces can suggest ways to improve energy efficiency by analyzing patterns in usage, while in waste management, AI can predict waste generation and automate sorting to reduce landfill contributions (Fang et al., 2023). Despite the promise of AI in promoting green behaviors, the literature highlights the need for further exploration of its long-term impact and its effectiveness in changing employee behavior in organizational

settings (Sari et al., 2020). Additionally, challenges remain in integrating AI technologies within existing organizational structures, requiring a shift in both technology infrastructure and employee mindset.

Artificial Intelligence and Sustainability

Artificial intelligence has been increasingly applied in sustainability practices, particularly in the areas of energy management, waste reduction, and sustainable supply chain management. AI's ability to analyze large datasets in real-time and optimize resource usage has made it a valuable tool for improving organizational sustainability (Ukoba, Olatunji, Adeoye, Jen, & Madyira, 2024). For example, machine learning models used in energy management systems can optimize energy consumption patterns by analyzing data from smart meters, leading to significant reductions in energy costs and carbon emissions (Ukoba et al., 2024). Similarly, AI-powered waste management systems predict waste generation patterns and automate recycling processes, minimizing landfill waste and improving recycling efficiency (Andeobu et al., 2022)). In the Philippine context, organizations such as First Gen Corporation have used AI to optimize energy generation and consumption, significantly reducing their carbon footprint (Rosales, Magsumbol, Palconit, Culaba, & Dadios, 2020). Globally, companies like Tesla use AI to optimize the performance of renewable energy solutions and storage systems, contributing to both economic and environmental sustainability (Kapoor et al., 2022). The integration of AI into sustainability practices not only yields environmental benefits but also offers cost-effective solutions for companies striving to meet their green goals.

Despite these advantages, the implementation of AI for sustainability purposes is not without its challenges. Technological barriers, such as insufficient AI infrastructure and limited data availability, hinder the widespread adoption of AI solutions (Liu et al., 2021). For instance, smaller organizations may struggle with the costs associated with implementing AI-driven sustainability systems, as they lack the necessary resources to invest in such technologies. Furthermore, concerns about data privacy and security remain significant obstacles to AI adoption, particularly in industries where sensitive information is involved (Liu et al., 2021). Organizational inertia, including resistance from employees and managers who fear job displacement or feel uncertain about AI's role, is another barrier that hinders AI's potential impact on green behavior (Sari et al., 2020). To overcome these challenges, organizations must invest in AI education and promote a culture of innovation that facilitates the integration of AI technologies into sustainability practices. More research is needed to understand the long-term impacts of AI interventions on employee behaviors and organizational outcomes.

Barriers and Enablers of AI in Promoting Green Behaviors

The literature reveals several barriers and enablers to the effective implementation of AI-driven sustainability interventions. Technological barriers include limited AI infrastructure, data privacy concerns, and a lack of standardization in data management systems, which impede large-scale adoption of AI solutions (Liu et al., 2021). For example, small and medium-sized enterprises (SMEs) often face difficulties in acquiring the resources needed to adopt AI technologies. Moreover, challenges in integrating AI systems with existing organizational infrastructure can delay implementation and diminish the overall effectiveness of AI interventions (Kapoor et al., 2022). These barriers must be addressed by investing in AI training for employees, adopting flexible systems that are compatible with existing processes, and ensuring data privacy is prioritized to maintain trust in AI-driven solutions.

On the other hand, several enablers can facilitate the adoption of AI for green behaviors. Organizational support, particularly from leadership, is essential in fostering an environment where AI technologies are embraced for sustainability purposes (Sari et al., 2020). A strong organizational culture that values sustainability and innovation can help overcome resistance to new technologies. In the Philippines, large corporations like SM Investments Corporation have shown that a clear commitment to sustainability by leadership is crucial for

the successful integration of AI-driven green initiatives (Sarmiento et al., 2021). Employee engagement is another key enabler, as employees are more likely to adopt AI-driven solutions when they perceive them as beneficial and easy to integrate into their routines. Clear communication about the advantages of AI in supporting sustainability goals, coupled with appropriate incentives for green behaviors, further enhances the likelihood of successful AI adoption. As organizations continue to invest in these enabling factors, the potential for AI to drive positive changes in workplace green behaviors will only grow.

Synthesis of Significant Studies Related to AI and Green Behaviors

The integration of Artificial Intelligence (AI) in promoting green behaviors within organizations has been explored across various studies, showing both its potential and challenges. AI-driven systems in energy optimization, such as those highlighted by Chen & Zhou (2020), can significantly reduce energy consumption, with reductions of up to 20%. This finding emphasizes the transformative potential of AI in addressing one of the most pressing sustainability issues—energy waste—while underscoring the importance of integrating advanced technology into energy management systems. Similarly, AI's impact on waste management, as evidenced by Andeobu et al. (2022), shows a 30% improvement in sorting efficiency. This highlights AI's role in enhancing operational efficiencies, particularly in industries where waste segregation is critical for reducing landfill contributions and fostering circular economy practices. Employee engagement with AI tools has also been shown to increase sustainable behaviors, with Sari et al. (2020) reporting a 25% increase in green behaviors and He & Harris (2021) finding a 15% improvement through AI nudges. These studies provide compelling evidence of AI's capability to influence human behavior toward sustainability. However, they also suggest that the success of such initiatives heavily depends on the design and implementation of AI tools, as well as their alignment with organizational goals and employee values.

Despite these promising findings, significant challenges remain. Organizational resistance, as noted by Liu et al. (2021), poses a major barrier, indicating that the adoption of AI for sustainability is not merely a technical issue but also a cultural and managerial one. The need for a supportive culture, as identified by Fapohunda, Genty, & Olanipekun (2021), further underscores the importance of leadership and change management in ensuring the effective integration of AI technologies. Without addressing these cultural and organizational barriers, the full potential of AI in driving sustainable practices may remain unrealized. AI's contribution to reducing carbon footprints is another area of significant impact. Gaur, Afaq, Arora, & Khan (2023) demonstrate an 18% decrease in carbon emissions through AI applications, showcasing its pivotal role in climate change mitigation strategies. Similarly, Kapoor et al. (2022) highlight how AI improves sustainability outcomes in supply chain management by 12%, further reinforcing the technology's role in optimizing resource use and reducing environmental impact across various organizational processes.

Furthermore, AI tools play a crucial role in tracking employee behaviors and providing data for sustainability reporting, as observed by Lee et al. (2021). This capability not only enhances transparency but also enables organizations to set more precise sustainability targets and measure progress effectively. Brown & Green (2018) emphasize AI's role in fostering daily environmentally responsible decisions, highlighting the importance of user-friendly AI systems that seamlessly integrate into employees' routines. Collectively, these studies underline AI's significant role in driving sustainability within organizations. However, critical evaluation reveals notable gaps. For instance, while AI has demonstrated efficacy in operational improvements, its long-term impact on fostering a culture of sustainability remains underexplored. Similarly, the ethical implications of using AI to monitor and influence employee behaviors warrant further investigation, as these practices may raise concerns about privacy and autonomy. Moreover, the scalability of AI-driven solutions in diverse organizational contexts, particularly in small and medium-sized enterprises (SMEs) with limited resources, requires additional attention. In conclusion, while the integration of AI in promoting green behaviors holds substantial promise, its successful implementation demands a multi-faceted approach. This includes addressing organizational resistance, fostering a culture of innovation and sustainability, and ensuring ethical considerations are prioritized. Bridging these gaps through targeted research and strategic implementation will be essential in unlocking AI's full potential as a catalyst for sustainable organizational transformation.

Table 1 - Significant Studies Related to AI and Green Behaviors

Study	Focus Area	Key Findings
Ukoba et al. (2024)	AI in energy optimization	AI-driven energy systems reduce workplace energy consumption by 20%.
He & Harris (2021)	AI-driven behavioral nudges	AI nudges increase eco-friendly behavior by 15% in the workplace.
Liu et al. (2021)	Barriers to AI in green behaviors	Organizational resistance is the main barrier to AI adoption for sustainability.
Fang et al. (2023)	AI in waste management	AI systems improve waste sorting efficiency by 30%.
Sari et al. (2020)	Employee engagement with AI	Engagement with AI tools leads to a 25% increase in green behaviors.
Fapohunda, Genty, & Olanipekun, (2021)	Organizational culture and green behavior	Culture and leadership are key to encouraging green behaviors.
Nguyen et al. (2020)	Employee motivation for green behavior	Incentives and feedback are crucial for promoting green behavior.
Davis (1989)	TAM in AI adoption	Perceived usefulness and ease of use are key to employee acceptance of AI.
Ajzen (1991)	TPB in sustainability	Attitudes, subjective norms, and perceived control influence green behaviors.
Gaur, Afaq, Arora, & Khan, 2023	AI for carbon footprint reduction	AI applications reduce the carbon footprint of organizations by 18%.
Wang & Li (2021)	AI and workplace sustainability	AI-enabled systems help organizations achieve sustainability goals faster.
Chen & Zhou (2020)	Machine learning in energy efficiency	Machine learning models optimize energy use, saving costs and energy.
Kapoor et al. (2022)	AI and green supply chain management	AI improves sustainability outcomes in the supply chain by 12%.
Lee et al. (2021)	AI in employee behavior tracking	AI monitors employee behaviors, providing data for sustainability reporting.
Brown & Green (2018)	AI and environmental responsibility	AI tools help employees make environmentally conscious decisions daily.

Theoretical Relationship

This study draws on two key theoretical frameworks: the Theory of Planned Behavior (TPB) and the Technology Acceptance Model (TAM), which provide valuable insights into the factors that influence the adoption of AI-driven interventions in the workplace.

Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) offers a useful lens for understanding how AI can influence employee green behaviors. According to TPB, an individual's behavior is determined by three factors: attitudes towards the behavior, subjective norms, and perceived behavioral control (Ajzen, 1991). In the context of green behaviors, AI can influence attitudes by providing employees with real-time feedback on their environmental performance, which can lead to positive reinforcement and motivation to engage in sustainable practices. Furthermore, AI can shape subjective norms by promoting a culture of sustainability within the organization and encouraging employees to adopt behaviors that align with organizational values.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) provides another useful framework for understanding the factors that influence the acceptance of AI in promoting green behaviors. TAM posits that the perceived ease of use and perceived usefulness of a technology are critical determinants of its acceptance (Davis, 1989). In the context of AI, employees are more likely to adopt AI-driven interventions for sustainability if they perceive the

technology as user-friendly and beneficial to their work. Organizations can facilitate this process by ensuring that AI tools are designed with the end-user in mind, providing adequate training and support, and clearly communicating the potential benefits of AI in promoting green behaviors.

Methodology

This study employs a systematic review methodology in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, which provides a structured approach for identifying, screening, and synthesizing relevant literature on the role of Artificial Intelligence (AI) in promoting employee green behaviors within organizational contexts. The search process involved a comprehensive literature search across multiple academic databases, including Google Scholar, Scopus, Web of Science, and IEEE Xplore. These databases were chosen for their broad coverage across technology, business, environmental sciences, and interdisciplinary studies. The search focused on peer-reviewed articles published between 2010 and 2024 to capture the evolution of research on AI and sustainability, especially with the rapid advancement of AI technologies in recent years.

A list of targeted keywords and search strings was developed to capture the breadth of relevant literature. Keywords included Artificial Intelligence (AI), Employee Green Behaviors, Sustainability, Workplace Interventions, and Technology Adoption, with Boolean operators (AND, OR) used to refine searches and ensure that studies specifically addressing AI applications within workplace sustainability were retrieved. To further refine the search, specific phrases like "AI-driven green behavior" and "workplace sustainability through AI" were employed to capture studies that intersected with the core themes of AI's role in promoting eco-friendly behaviors at work.

The initial search resulted in approximately 1,200 articles, which were narrowed down to 198 through title and abstract screening for relevance. A full-text review further refined the selection to 34 articles that met inclusion criteria, focusing on empirical findings related to AI-driven green behaviors in workplace settings. In addition to the predefined inclusion criteria, quality assessment metrics were applied to ensure the credibility and rigor of the selected studies. Studies were evaluated based on research design, sample size, methodological robustness, and relevance to the research question. Furthermore, an inter-rater reliability process was conducted, where multiple researchers independently assessed the articles, and discrepancies were resolved through discussion to enhance objectivity in the selection process.

Inclusion criteria for this review were:

1. Peer-reviewed journal articles.
2. Studies focused on AI-driven interventions for promoting green behaviors in the workplace.
3. Articles that provided empirical findings related to the impact of AI on employee behavior and sustainability.
4. Studies conducted in organizational settings, both internationally and within the Philippines.

Exclusion criteria included:

1. Non-peer-reviewed articles, conference proceedings, and grey literature.
2. Studies that did not directly address the application of AI in promoting green behaviors.
3. Articles that were not available in full text or lacked empirical data.

Data Extraction and Analysis Process

The data extraction process followed a structured protocol to ensure consistency and rigor. Relevant data from each study were extracted and recorded in a standardized format, which included information on study objectives, methods, key findings, and limitations. These data were then categorized according to the themes. The researcher conducted a qualitative synthesis to identify patterns and trends across studies, assessing

the effectiveness of AI interventions in promoting green behaviors and pinpointing barriers and enablers of AI adoption.

Categorization Table: Summary of Key Findings

The categorization of studies was essential in comparing the impact of AI across different organizational contexts. The following table summarizes the key findings from the studies included in this review, with details on the publication name and number of articles included for each category. This table summarizes the journals that were cited in the study and the number of articles reviewed from each publication.

Table 2 - Journal Publications and Number of Articles Included in the Systematic Review

Study Focus Area	Number of Articles	Journal Publications
AI in Energy Optimization	5	- Engineering Applications of Artificial Intelligence - Energy & Environment - Sustainability Science - Ecological Informatics - IEEE Xplore
AI-Driven Behavioral Nudges	3	- Journal of Organizational Behavior - MIS Quarterly - Human Resource Development Review
Barriers to AI Adoption	4	- Journal of Business Research - Information Systems and Analytics for Society - Environmental Chemistry Letters - Journal of Management & Organization
AI in Waste Management	2	- Science of The Total Environment - Environmental Chemistry Letters
Employee Engagement with AI	6	- Journal of Knowledge Management - Journal of Educational Management & Social Sciences - Eurasian Business Review - International Research Journal of Business Studies - Proceedings of HNICEM - International Journal of Productivity and Performance Management
Organizational Culture and Green Behavior	3	- Philippine Business Review - Corporate Social Responsibility and Environmental Management - Business Process Management Journal
AI for Carbon Footprint Reduction	4	- Ecological Informatics - IEEE Xplore - Journal of Artificial Intelligence General Science - International Journal of Supply Chain Management
AI in Green Supply Chain Management	2	- International Journal of Supply Chain Management - Cochrane Handbook for Systematic Reviews of Interventions
AI in Employee Behavior Tracking	5	- Green HRM Awareness and Training in Higher Education Institutions (IGI Global) - American Journal of Industrial Medicine - Journal of Advanced Computing Systems - MIS Quarterly - SPIE

The data collection and reporting process adhered to a transparent and systematic approach. After identifying the relevant articles, each was assessed for quality, focusing on the robustness of its methodology

and the validity of its findings. In each study, the researchers examined the type of AI interventions used (e.g., machine learning models, predictive analytics, real-time feedback systems) and how these interventions influenced employee green behaviors (e.g., energy conservation, waste reduction). The researcher also recorded any limitations or gaps identified by the authors, such as the challenges of AI integration or the lack of long-term studies.

Table 3 - Summary of Studies Reviewed

Study Focus Area	Key Findings	Publication Name	Number of Articles
AI in Energy Optimization	AI-driven systems reduce workplace energy consumption by 20%.	Ukoba et al. (2024)	5
AI-Driven Behavioral Nudges	AI nudges increase eco-friendly behavior by 15% in the workplace.	He & Harris (2021)	3
Barriers to AI Adoption	Organizational resistance is the primary barrier to AI adoption for sustainability.	Liu et al. (2021)	4
AI in Waste Management	AI systems improve waste sorting efficiency by 30%.	Fang et al. (2023)	2
Employee Engagement with AI	Engagement with AI tools leads to a 25% increase in green behaviors.	Sari et al. (2020)	6
Organizational Culture and Green Behavior	Organizational culture and leadership support are key to promoting green behaviors.	Fapohunda et al. (2021)	3
AI for Carbon Footprint Reduction	AI applications reduce organizational carbon footprint by 18%.	Gaur et al. (2023)	4
AI in Green Supply Chain Management	AI improves sustainability outcomes in the supply chain by 12%.	Kapoor et al. (2022)	2
AI in Employee Behavior Tracking	AI tools track employee behaviors, providing data for sustainability reporting.	Lee et al. (2021)	5

Results and Discussion

The systematic review reveals a significant body of research on the application of artificial intelligence (AI) in promoting green behaviors within organizations, highlighting both the potential and the challenges of integrating AI into sustainability practices. One of the most prominent findings is the effectiveness of AI-driven feedback mechanisms, nudges, and real-time data analytics in fostering eco-friendly behaviors among employees. Studies have demonstrated that AI systems can track employee actions, provide instant feedback on energy consumption or waste management, and offer personalized recommendations that encourage more sustainable choices (Verma, Sandys, Matthews, & Goel, 2024; Andeobu et al., 2022). For instance, AI-enabled systems for energy optimization have been found to reduce energy usage by up to 20%, while waste management systems enhanced by AI can improve sorting efficiency by 30% (Fang et al., 2023; Verma, Sandys, Matthews, & Goel, 2024). These results underscore AI's potential as a powerful tool for guiding employees toward sustainability goals by making the environmental impact of their behaviors more tangible and actionable.

However, the review also identifies several barriers to the widespread adoption of AI in promoting green behaviors. One major obstacle is organizational resistance, which is often rooted in fears of job displacement, lack of understanding about the technology, and a general reluctance to change established practices (Liu et al., 2021). Additionally, technological limitations, such as insufficient AI infrastructure and data privacy concerns, complicate the implementation of AI systems on a large scale (Liu et al., 2021). Despite these challenges, the review emphasizes that enablers like strong organizational culture, leadership support, and employee engagement are crucial to overcoming resistance and ensuring the success of AI-driven initiatives. Studies suggest that organizations that prioritize a culture of innovation and sustainability, combined with clear

communication and training on AI tools, are more likely to succeed in integrating AI for green behaviors (Chen, Viardot, & Brem, 2019; Lee et al., 2021).

Table 4 - Key findings on how AI technologies interact with employee green behaviors in the workplace

Key Theme	Result/Evidence	Source
AI-driven Feedback Mechanisms	AI provides real-time feedback on energy usage and waste management, encouraging employees to adopt eco-friendly behaviors.	Verma, Sandys, Matthews, & Goel (2024), Andeobu et al. (2022)
Energy Optimization	AI systems significantly reduce workplace energy consumption, with reductions up to 20%.	Verma, Sandys, Matthews, & Goel, (2024)
Waste Management Efficiency	AI enhances waste sorting and recycling processes, improving waste management efficiency by up to 30%.	Fang et al. (2023)
Employee Engagement with AI Tools	Engagement with AI-driven sustainability tools leads to a 25% increase in employee adoption of green behaviors.	Sari et al. (2020)
Organizational Resistance to AI	Resistance from employees and managers is a key barrier, often driven by concerns over job displacement or lack of trust in AI technology.	Liu et al. (2021)
Technological Limitations	Technological challenges, including lack of infrastructure and data privacy issues, hinder the adoption of AI for sustainability.	Liu et al. (2021)
Leadership Support	Strong leadership and organizational culture that prioritizes sustainability are critical in driving the adoption of AI for green behaviors.	Chen, Viardot, & Brem, (2019)
AI for Carbon Footprint Reduction	AI applications enable organizations to reduce their carbon footprint by up to 18% through energy management and waste reduction strategies.	Gaur, Afaq, Arora, & Khan (2023)
AI and Employee Behavior Tracking	AI tools track employee behaviors related to sustainability, enabling better monitoring and reporting on green practices.	Lee et al. (2021)

Moreover, the review highlights the relevance of theoretical frameworks such as the Theory of Planned Behavior (TPB) and the Technology Acceptance Model (TAM) in explaining the factors that shape employee responses to AI-driven sustainability initiatives. The TPB framework (Ajzen, 1991) suggests that employees' subjective norms and perceived behavioral control significantly impact their willingness to adopt AI-enabled green practices. If employees perceive that their peers and leaders support AI-driven sustainability efforts, they are more likely to engage in them. Additionally, perceived behavioral control or an employee's belief in their ability to effectively use AI technologies—determines whether they will incorporate these tools into their daily routines. The TAM framework (Davis, 1989) further reinforces that AI adoption is driven by its perceived usefulness and ease of use. When AI systems are intuitive, seamlessly integrated, and demonstrably beneficial to employees' workflows, adoption rates increase. These theoretical perspectives emphasize the need for organizations to address usability concerns, foster a culture of digital sustainability, and actively communicate the benefits of AI-driven initiatives to encourage widespread engagement.

The integration of AI into Green Human Resource Management (GHRM) further strengthens sustainability efforts by optimizing recruitment, retention, and employee engagement strategies. AI-powered hiring tools enable organizations to attract candidates who align with environmental values, reducing turnover and reinforcing sustainability-focused corporate cultures. Personalized AI-driven training programs also help employees build sustainability competencies, reinforcing pro-environmental workplace behaviors. Across industries, the synergy between AI and GHRM is reshaping traditional HR functions, shifting them towards a

model that not only enhances operational efficiency but also cultivates a more environmentally responsible workforce. Future research should explore longitudinal studies and controlled trials to validate AI's long-term influence on employee behavior, organizational sustainability goals, and cross-sectoral environmental impact.

AI-Driven Green HRM Practices

AI-driven Green HRM practices play a crucial role in fostering workplace sustainability by integrating artificial intelligence into various human resource functions. In recruitment and retention, AI tools streamline the hiring process by identifying candidates whose values align with sustainability principles, ultimately reducing turnover rates (Pillai et al., 2024). Additionally, AI enhances employee engagement by facilitating personalized training programs that encourage green behaviors, leading to greater employee satisfaction and commitment to sustainability initiatives (Alzyoud, 2022; Olazo, 2023).

Impact on Innovative Work Behavior

Beyond HRM, AI also significantly impacts innovative work behavior within organizations. Through green talent management, AI-driven systems motivate employees to actively contribute to sustainability goals, fostering a culture of innovation and environmental responsibility (Odugbesan et al., 2022). Furthermore, AI supports transformational leadership by equipping leaders with tools to cultivate an innovation-driven culture, which is essential for advancing green initiatives within the workplace (Odugbesan et al., 2022; Olazo, 2022).

While the benefits of AI in promoting green behaviors are evident, challenges such as the need for skilled personnel and ethical considerations in AI implementation must also be addressed. Balancing technological advancement with employee welfare remains a critical concern in the pursuit of sustainable practices.

Conclusion

The systematic review highlights the increasing role of artificial intelligence (AI) in supporting green behaviors among employees within organizations. The findings suggest that AI-driven interventions, such as real-time data analytics, feedback systems, and nudging mechanisms, have shown potential in encouraging sustainable workplace practices. AI technologies provide personalized insights into areas like energy consumption and waste management, which may contribute to improved sustainability efforts at the organizational level. However, empirical validation of AI's long-term effectiveness in driving employee behavior change remains limited, and challenges such as organizational resistance, technological constraints, and employee skepticism continue to hinder widespread adoption. Addressing these barriers is crucial for optimizing the integration of AI into sustainability initiatives.

The practical and theoretical implications of these findings emphasize the importance of an enabling environment for AI adoption rather than assuming its automatic effectiveness. Organizations should focus on structured implementation strategies, including employee training programs and transparent communication about AI's role in sustainability. From a theoretical perspective, further research is needed to examine factors influencing employee acceptance, such as perceived usefulness, ease of use, and trust in AI systems, as these aspects are still underexplored in the existing literature. Future studies should also investigate longitudinal effects and controlled settings to assess AI's sustained impact on workplace sustainability behaviors.

In terms of recommendations, organizations may consider gradual AI integration, beginning with small-scale pilots to evaluate feasibility and acceptance before broader implementation. Leadership commitment and ongoing assessment of AI's effectiveness are essential in ensuring that sustainability goals align with technological advancements. Rather than assuming AI as a standalone solution, businesses must adopt a data-driven and iterative approach to refining AI-driven sustainability strategies. By continuously assessing outcomes

and adapting implementation approaches, organizations can make informed, evidence-based decisions about AI's role in promoting sustainable workplace behaviors.

Novel Contribution of the Study

The systematic review underscores how artificial intelligence (AI) is being leveraged across various sectors—including manufacturing, healthcare, finance, and corporate sustainability initiatives—to promote environmentally responsible behaviors among employees (Yutuc, Olazo, & Sarmiento, 2021). In the manufacturing sector, AI-driven energy management systems and automated sustainability reporting tools help organizations optimize resource usage and reduce carbon footprints. In healthcare, AI applications assist in waste reduction and sustainable procurement strategies, while in finance, AI-enabled analytics support green investment decisions and corporate environmental, social, and governance (ESG) compliance. Corporate sustainability programs increasingly integrate AI-driven nudging mechanisms to influence employees' daily behaviors, such as reducing energy consumption and waste production. Despite sector-specific variations, a common thread is the importance of employee acceptance and engagement, which directly influences AI's effectiveness in driving sustainable workplace behaviors.

This study contributes novel insights by merging the fields of artificial intelligence (AI) and sustainability, offering a fresh perspective on how technology can transform green behaviors within organizations. It highlights the role of AI-driven tools, such as real-time feedback systems, energy optimization technologies, and waste management solutions, in fostering eco-friendly behaviors among employees. By incorporating theoretical frameworks like the Theory of Planned Behavior (TPB) and the Technology Acceptance Model (TAM), the research provides an in-depth understanding of the factors influencing employee adoption of AI for sustainability. This interdisciplinary approach not only enriches academic discussions on AI and green human resource management (GHRM) but also introduces a framework for future studies exploring the nexus of technology, employee engagement, and environmental goals.

For practitioners, the study offers actionable strategies for embedding AI into sustainability initiatives. It emphasizes the importance of leadership support, transparent communication, and incremental implementation to overcome organizational resistance. Additionally, it provides practical guidance on leveraging AI to enhance employee engagement, streamline HR practices, and align workforce behaviors with sustainability objectives. By connecting AI to innovative work behaviors and transformational leadership, the research underscores its strategic value in fostering a culture of environmental responsibility. This dual focus on theory and practice equips both academics and practitioners with the tools and insights needed to drive meaningful, technology-enabled progress toward sustainability (Guillen, 2022).

Limitation and Future Direction

While the benefits of integrating AI into green human resource management (GHRM) are clear, barriers such as organizational resistance, technological limitations, and ethical concerns hinder widespread adoption. Resistance often stems from fears of job displacement, a lack of understanding, and reluctance to change established practices, especially in rigid organizational structures. Technological challenges, including inadequate infrastructure, data privacy issues, and a shortage of skilled personnel, further complicate implementation. Ethical concerns, such as potential biases and data misuse, undermine trust and system credibility. To address these challenges, future research should explore strategies to foster AI acceptance through leadership, transparent communication, and employee training, while also identifying scalable solutions for improving AI infrastructure and ethical implementation. Longitudinal studies and sector-specific research can provide insights into AI's sustained impact, helping organizations align technological advancements with workforce needs and sustainability goals.

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