**Technology for Sustainability: The Impact of Avatar-Led Green Training on OCBE and Green Creativity**

Fei Hao[a*], Wailing Ng[b], Adil Masud Aman[a], Chen Zhang[a,b]

a.  School of Hotel and Tourism Management, The Hong Kong Polytechnic University, Hong Kong, China.
b.  Department of Computing, The Hong Kong Polytechnic University, Hong Kong, China.

* Corresponding author

Fei Hao is the corresponding author and she can be reached by Tel: +852-3400 2291 and Email: ffaye.hao@polyu.edu.hk

Emails: ffaye.hao@polyu.edu.hk (F Hao), wailing.ng@polyu.edu.hk (WL Ng), adil-masud.aman@polyu.edu.hk (AM Aman), jason-c.zhang@polyu.edu.hk (C Zhang)

**Technology for Sustainability: The Impact of Avatar-Led Green Training on OCBE and Green Creativity**

**Purpose:** This study evaluates the impact of Avatar-led Green Training on enhancing Organizational Citizenship Behavior for the Environment (OCBE) and green creativity among employees in the hospitality sector. It aims to understand how such innovative training influences green engagement and workplace spirituality, exploring the role of employees' biospheric values in this context.

**Design/methodology/approach:** The research involved implementing Avatar-led Green Training courses for 724 hotel employees, followed by comprehensive online surveys. The collected data was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to assess the effectiveness and implications of the training.

**Findings:** Findings indicate that Avatar-led Green Training significantly enhances green engagement in OCBE, primarily through the development of workplace spirituality. Additionally, the study discovers a moderating effect of biospheric value on the training's efficacy in fostering workplace spirituality, underlining its critical role in environmental consciousness and creativity.

**Practical implications:** This research benefits managers, HR professionals, senior leaders, and employees by enhancing training effectiveness and workplace satisfaction, while also positively impacting the industry's environmental footprint and reputation.

**Originality/value:** This study's originality lies in its exploration of AI-driven training methods, particularly Avatar-led Green Training, in enhancing OCBE and green creativity in the hospitality sector. It offers a novel perspective on how technology can be leveraged for environmental stewardship and employee engagement.

**Keywords:** Avatar, Green Training, Workplace Spirituality, Organizational Citizenship Behavior for the Environment (OCBE), Green Creativity, Green Engagement

## 1. Introduction

Sustainability has increasingly become a critical issue within the hospitality industry (Molina-Collado et al., 2022; G. D. Sharma et al., 2023; Sharma et al., 2024), as evidenced by the growing commitment of service providers to eco-friendly practices (T. Sharma et al., 2024; Tanveer et al., 2024). For instance, Marriott International aims to cut water and carbon intensity by 15% and 30%, respectively, by 2025. Meanwhile, Wyndham Hotels & Resorts has adopted energy-saving lighting and implemented irrigation systems to save water in landscaping (Akel & Noyan, 2024). At the heart of these initiatives are employees (Cabral & Jabbour, 2020), being the direct implementers of sustainable practices. Recent reports highlight significant deficiencies in employee engagement in sustainability initiatives, such as insufficient training and awareness (ILO, 2022) and lack of organizational support for eco-friendly practices (GRI, 2023). For instance, the UNEP (2022) found that only 40% of employees in the hospitality

sector feel adequately trained in sustainability, while the USGBC (2023) reported that 55% of employees believe their organizations do not prioritize environmental initiatives. To address this, the integration of environmental management strategies with human resource management, known as green human resource management, is being emphasized (Tanveer et al., 2024). This approach includes green training, equipping employees with essential skills for sustainability, and green performance management, aligning their behaviors with environmental goals through regular evaluations (Anwar et al., 2020). Additionally, there are increased efforts to provide employees with opportunities to engage in and propose eco-friendly initiatives, boosting their involvement in sustainability efforts (Cabral & Jabbour, 2020).

Among the various initiatives, green training emerges as a pivotal practice in promoting environmental stewardship within the hospitality industry (Anwar et al., 2020). This form of training not only heightens employees' environmental awareness but also equips them with essential skills for executing sustainable operations (Pham et al., 2019). It serves as a crucial mechanism for encouraging sustainable procurement, stimulating eco-innovation, enhancing environmental management practices, and cultivating a culture of sustainability (Cabral & Jabbour, 2020). Despite its acknowledged significance, the post-pandemic landscape presents urgent challenges for green training, particularly due to the diminished availability of training professionals and the limitations of traditional in-person training models (Jiang & Wen, 2020). This situation underscores the critical demand for innovative, cost-efficient green training methodologies that can overcome these hurdles, thereby enhancing training outcomes and the overall learning experience in this challenging context (Cabral & Jabbour, 2020; Park et al., 2023).

Avatars, or virtual humans, are interactive artificial entities characterized by their anthropomorphic appearances (Pauw et al., 2022). They can be classified based on the controlling subject: those that replicate human actions in a virtual setting and those governed by AI algorithms (Choi et al., 2020). This study focuses on the latter, involving AI-driven digital humans capable of managing complex interactions in customer service, virtual assistance, training, and therapy applications without human intervention (Pauw et al., 2022). Avatar-led Green Training is a specific and comprehensive training program designed to be led entirely by avatars. These avatars function like professional human trainers, building relationships with employees, fostering an environmental mindset, imparting practical skills, and providing real-time advice and tutoring in daily tasks (Dwivedi et al., 2024). This innovative approach addresses the gap in employee engagement by integrating interactive AI-driven tools in sustainability training (Choi et al., 2020; Pauw et al., 2022).

Avatar can be an effective tool in enhancing employee engagement and learning outcomes by providing immersive and personalized training experiences (Dwivedi et al., 2024). As proposed by Job Demands-Resources (JD-R) Theory, job resources, no matter in physical, psychological, social, or organizational aspects of the job, that assist in achieving work goals and foster personal growth, learning, and development can initiate a motivational process (Demerouti et al., 2001). This process leads to enhanced engagement and positive workplace outcomes (Radic et al., 2020). Green training by providing a meaningful vision that empowers employees to make a difference in the word while providing opportunities for learning, skill development, and a sense of mastery, adds to their sense of meaning and purpose in life (Anwar et al., 2020). Such meaning will enhance workplace spirituality and, in conjunction with green

training, cultivate stronger intrinsic motivation among employees. Consequently, engaged employees, who leverage their full cognitive, physical, and emotional capacities, not only thrive in their designated roles but also exhibit increased responsiveness and innovative thinking in addressing environmental challenges (Hu et al., 2022; Luu, 2019; Pham et al., 2019). Understanding the role of avatars in green training and their impact on workplace spirituality and other outcomes provides insights into how these tools can be leveraged to improve employee engagement in sustainability initiatives. In addition, employees' personal pro-environmental values can shape their environmental beliefs and norms at work, subsequently influencing their behaviors (Khan et al., 2024). Recent reports highlight significant deficiencies in employee engagement in sustainability initiatives, such as insufficient training and awareness (ILO, 2022) and lack of organizational support for eco-friendly practices (GRI, 2023). Therefore, understanding how employees' biospheric values impact the effectiveness of green training is crucial for cultivating workplace spirituality that encourages eco-friendly behaviors within organizations.

This study aims to investigate the influence of Avatar-led Green Training on workplace spirituality, and how these factors subsequently affect green engagement, OCBE, and green creativity. Additionally, the study will examine the moderating role of biospheric values in enhancing the effectiveness of Avatar-led Green Training in fostering workplace spirituality. The study entailed implementing prototype Avatar-led Green Training programs for 724 hotel employees, followed by administering online surveys to these participants. From a theoretical perspective, the research extends JD-R Theory by offering a new perspective on green engagement and its boundary conditions. It also enhances our understanding of how AI-powered avatars can be effectively utilized to advance sustainability initiatives within the hospitality industry. On a practical level, this study offers valuable insights and innovative approaches for hotel managers and human resources professionals. It guides them in developing and implementing Avatar-led Green Training programs and in the strategic recruitment of employees.

## 2. Literature review

### 2.1. Avatar-led Green Training and JD-R Theory

Green training is designed to provide employees with the knowledge, skills, and attitudes needed to achieve an organization's environmental goals (Pham et al., 2019). It plays a crucial role in enhancing awareness of environmental standards and issues, empowering employees to mitigate negative environmental impacts, and encouraging active participation in sustainability efforts (Anwar et al., 2020). Avatar-led Green Training introduces a modern methodology by utilizing digital avatars, generative AI, and augmented/virtual reality (AR/VR) technologies, offering an immersive, interactive, and tailored learning experience in environmental and sustainability education.

One significant advantage of Avatar-led Green Training is the consistent quality of training it delivers. This consistency ensures that sustainability principles are uniformly understood and applied across different departments and locations, essential for upholding standardized environmental practices throughout a hotel chain (Luu, 2019). Furthermore, the AI-powered avatars provide personalized training, adapting to each employee's unique learning journey, background, and professional goals (Dwivedi et al., 2024). This personalized approach

helps make the training more relevant and engaging for each individual, promoting an inclusive atmosphere that values diverse perspectives. Employees can also reach out to their avatar trainers anytime for assistance, while the avatars actively engage with employees to monitor their progress and address any issues they might encounter (Dwivedi et al., 2024). This ongoing support ensures that learning is not only self-paced and adaptable but also guided and responsive to individual needs. Avatar-led Green Training can offer better flexibility by allowing employees to learn at their own pace and on their schedule, accommodating various work routines and learning preferences (Choi et al., 2020). This adaptability also applies to the broad range of sustainability topics available, addressing the varied interests of the workforce. Moreover, avatar-led training brings sustainability to life through vivid, interactive virtual environments (Wang et al., 2020). Employees from different departments or hotel locations can unite in these virtual settings to see the direct impact of eco-friendly practices across cultures or tackle role-playing scenarios that test their ability to implement sustainable solutions in real-world situations. This not only makes sustainability education engaging and practical but also cultivates a supportive and inclusive learning community, where diverse insights are appreciated and exchanged (Wang et al., 2020).

The present study adopts the JD-R Theory as the overarching theoretical framework for the proposed research model. JD-R Theory, pivotal in occupational health psychology, delineates the impact of job demands and resources on employee well-being, engagement, and performance (Demerouti et al., 2001). Job demands are aspects of a job requiring sustained effort and are associated with certain costs, while job resources help achieve work goals, reduce job demands, and stimulate personal growth and development (Radic et al., 2020). The theory identifies two critical processes: the health impairment process, where excessive job demands result in burnout, and the motivational process, where job resources boost work engagement, thereby enhancing performance (Demerouti et al., 2001).

Applying JD-R Theory, this research posits that Avatar-led Green Training and workplace spirituality are significant job resources. Avatar-led Green Training equips employees with the necessary skills and knowledge for environmental stewardship (Anwar et al., 2020), while workplace spirituality provides them with a sense of purpose and fulfillment derived from contributing to environmental goals (Bayighomog & Arasli, 2022). Through the lens of JD-R Theory, these job resources are expected to not only mitigate the effects of job demands but also initiate a motivational process that enhances green engagement. This process is anticipated to culminate in positive environmental behaviors, including green creativity and OCBE.

*2.2. Workplace Spirituality*

Workplace spirituality, as conceptualized by Ashmos and Duchon (2000), is recognized for acknowledging the deeper, inner life of employees that is both nourished by and contributes to meaningful work within a community context. Expanding on this concept, Milliman et al. (2003) have articulated it as encompassing three key dimensions: meaningful work at an individual level, characterized by the pursuit of profound life purpose; a sense of community at the group level, fostering meaningful connections with colleagues and work associates; and alignment with organizational values at an organizational level, where personal core beliefs resonate with the organization's mission and values. Research indicates that workplace spirituality offers valuable perspectives on employee work attitudes, such as job commitment,

job satisfaction, and job involvement (Bayighomog & Arasli, 2022). Furthermore, it has significant influence on organizational performance and OCB (Haldorai et al., 2020).

Green training, emphasizing a meaningful vision and personal growth, has the potential to enhance workplace spirituality. Research shows that a vision that transcends financial or operational objectives to include societal and community well-being can elevate employees' sense of transcendence in their work (Bayighomog & Arasli, 2022). Training that supports opportunities for learning, skill development, and mastery, enabling employees to achieve their full potential, plays a significant role in deepening their sense of meaning and purpose (Srivastava & Gupta, 2022). Giacalone & Jurkiewicz (2010) highlight the significant impact of spiritual freedom and individual expression on enhancing workplace spirituality, particularly when each employee's unique background is recognized and valued. Avatar-led Green Training, by offering personalized and inclusive experiences tailored to the diverse preferences, backgrounds, and personal experiences of employees (Dwivedi et al., 2024), cultivates a deeper sense of meaning and purpose across the workforce. Therefore, this leads to the following hypothesis:

**H1**: *Avatar-led Green Training positively influences workplace spirituality.*

## 2.3. Biospheric Value

Values are critical in shaping behaviors (Verma et al., 2019), with individuals often respond more strongly to outcomes and messages that align with their core values (Shehawy, 2023). Values also play a significant role in molding an individual's environmental consciousness and influencing their norms and attitudes towards ecological issues (Choi et al., 2015). The biospheric value, in particular, encompasses deep-seated beliefs that prioritize the well-being of the biosphere. Individuals with strong biospheric values inherently value the environment and its preservation, emphasizing the importance of protecting natural ecosystems for their inherent worth (Chen & Lee, 2022). This perspective transcends mere environmental consciousness, as such individuals consistently incorporate these values into their decision-making, giving priority to the health and well-being of natural environments and carefully considering the ecological consequences of their actions (Verma et al., 2019).

Giacalone & Jurkiewicz (2010) posit that employees who find their values in alignment with those of their organization are more likely to experience transcendence in their work. This alignment feeds into the desire for an integrated life, where one's work harmonize with their core essence (Bayighomog & Arasli, 2022). Therefore, employees with high biospheric values are more likely to have deeper engagement with the training materials, showing strong receptiveness and active participation in collaborative exercises, idea-sharing, and feedback processes (Anwar et al., 2020). As a result, this engagement fosters a deeper sense of purpose and belonging among these employees, who begin to perceive their roles as significantly meaningful and see themselves as essential contributors to the organization's environmental sustainability goals. Consequently, the following hypothese is proposed:

*H2*: *Biospheric value positively moderates the relationship between avatar-led green training and workplace spirituality, such that employees with high biospheric values are likely to experience a greater sense of workplace spirituality following avatar-led green training compared to those with low biospheric values.*

### 2.4. Green Engagement

Employee engagement, as originally conceptualized by Kahn (1990), is understood as the active involvement of an organization member's complete self in their work role. This involves the expression and employment of one's physical, cognitive, and emotional faculties during role performances. It encompasses a profound psychological commitment and active behavioral participation, whereby engaged employees dedicate full effort not only to their primary job tasks and responsibilities but also to extra-role behaviors (Milliman et al., 2018). Some researchers also viewed engagement as an integration of various job attitudes including job involvement, organizational commitment, and job satisfaction (Hao, 2020). Following Milliman et al. (2018), this study views engagement as a multi-dimensional construct comprising three key aspects: physical engagement, referring to the investment of physical efforts in green practices; emotional engagement, denoting the passion and affection associated with green initiatives; and cognitive engagement, reflecting the focus and concentration directed towards green practices.

Workplace spirituality significantly enhances employees' engagement by improving their physical, cognitive, and emotional involvement in the workplace (Milliman et al., 2018). Some scholars argue that striving for spiritual fulfillment in the workplace encourages individuals to realize their full potential and fosters a deeper sense of intrinsic motivation and self-fulfillment, ultimately leading to increased engagement (Karatepe et al., 2022). As proposed by JD-R Theory, Avatar-led Green Training and workplace spirituality as job resources will initiate a motivational process leading empolyees to be more engaged in green practices. Furthermore, in line with the norm of reciprocity highlighted by Organizational Support Theory, a social exchange relationship will be fostered (Shehawy, 2022), where socio-emotional and instrumental benefits perceived by employees are reciprocated with positive workplace outcome, often through increased engagement in their roles (Gordon, 2020). Therefore, employees who experience a high level of green training and spiritual fulfilment are thus more inclined to invest fully in their work, contributing to a more engaged and committed workforce. Therefore, this leads to the following hypothesis:

*H3a*: *Workplace spirituality positively influences green engagement.*

*H3b*: *Avatar-led Green Training positively influences green engagement.*

### 2.5. Organizational Citizenship Behavior for the Environment (OCBE)

Research indicates a positive correlation between OCBE and improved environmental performance within organizations (Anwar et al., 2020; Luu, 2019; Pham et al., 2019). OCBE, an extension of the concept of OCB, is defined as individual and discretionary actions that are

not directly rewarded by formal systems but significantly contribute to effective environmental management within organizations (Pham et al., 2019). These behaviors demonstrate an employee's voluntary commitment to engage in actions beyond their defined job roles, contributing to the environmental well-being of their organization and colleagues (Kim et al., 2020). Boiral and Paillé (2012) have further refined OCBE into three distinct dimensions: eco-initiatives, eco-civic engagement, and eco-helping. Eco-initiatives involve personal actions by employees aimed at minimizing environmental impacts at the workplace. Eco-civic engagement encompasses organizational-level initiatives, where employees voluntarily participate in green projects and events. Lastly, eco-helping focuses on employees supporting each other with environmental challenges through sharing knowledge and collaborative problem-solving.

Employee engagement involves the complete investment of an individual's cognitive, physical, and emotional capacities in their work (Hao, 2020). This holistic form of engagement is crucial for improving workplace behaviors and task performance (Karatepe et al., 2022). A study by Milliman et al. (2018) indicates that hotel employees who are green work-engaged at high levels exhibit increased levels of discretionary behaviors that go beyond formal job descriptions. In line with JD-R Theory, engaged employees tend to have an elevated consciousness and responsiveness to environmental matters, actively engaging in eco-friendly practices (Karatepe et al., 2022). Furthermore, they also play a key role in supporting their peers in adopting and understanding sustainable practices, contributing significantly to the collective environmental sustainability of both the organization and the wider community (Luu, 2019). This dynamic of engagement is critical in fostering OCBE, where employees are more inclined to exhibit proactive green behaviors (Pham et al., 2019). Consequently, this leads to the development of the following hypothesis:

**H4:** *Green engagement positively influences OCBE.*

## 2.6. Green Creativity

Green creativity, as defined by Kalyar et al. (2021), is the ability to generate innovative and practical ideas for green products, services, processes, or practices. Green creativity empowers employees to proactively identify and tackle challenges within green practices, innovate solutions tailored to evolving environmental issues (Luu, 2022), and contribute significantly to eco-work behavior and environmental organizational citizenship (Aboramadan et al., 2021). In the hospitality industry, the role of green creativity is vital (Kalyar et al., 2021). It equips hotel employees with the creative capacity to develop and implement strategies that reduce the ecological impact of their operations, including improving waste management, energy conservation, and resource optimization (Luu, 2022).

Employee engagement plays a pivotal role in promoting innovative behaviors (Hu et al., 2022). According to the JD-R Theory, employees who are energetic and enthusiastic about green practices are more likely to be fully engaged in their work, displaying positive green behaviors, including green creativity (Karatepe et al., 2022). These engaged employees leverage their diverse skills to excel in their roles and show an enhanced awareness of and responsiveness to environmental concerns (Pham et al., 2019). This engagement fosters a

proactive attitude towards environmental sustainability, prompting employees to engage in eco-friendly practices and spearhead innovative eco-initiatives (Hu et al., 2022). Therefore, the following hypothesis is developed:

**H5:** *Green engagement positively influences green creativity.*

Research consistently demonstrates a positive link between OCB and innovative behavior, as both typically require employees to extend efforts beyond their standard duties (Kim et al., 2020). Employees demonstrating high levels of discretionary behaviors beyond formal job descriptions on green practice are more inclined to participate in green innovation activities (Öğretmenoğlu et al., 2022). This inclination is rooted in their deep commitment to environmental stewardship, motivating them to seek out and implement innovative strategies that effectively mitigate environmental impact (Pham et al., 2019). Their voluntary actions in green practices reflects a proclivity to not just adhere to existing environmental protocols but also to creatively explore and initiate new approaches for sustainable practices (Öğretmenoğlu et al., 2022). As such, the following hypothesis is developed (see Figure 1 for conceptual model):

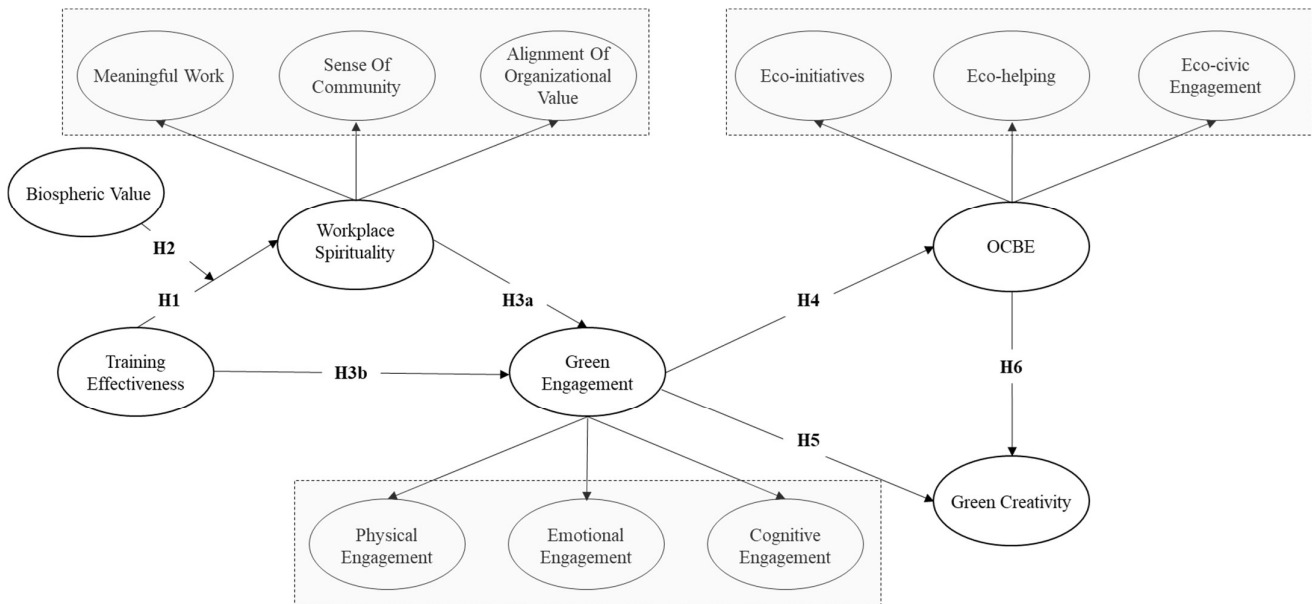**H6**: *OCBE positively influences green creativity.*



Figure 1 Conceptual Model

Source: Authors' own creation

## 3. Methods

This study's participant recruitment was guided by stringent eligibility criteria: only individuals aged 21 to 40 years, with a minimum of one year's experience in the hotel industry and specifically in operational roles, were eligible. Upon successfully completing the survey, participants were compensated monetarily. To attract a global participant base, this study utilized Prolific, a platform renowned in academic circles for its diverse, quality participant pool. Prolific's robust screening capabilities and adherence to ethical standards make it a preferred choice for gathering dependable and representative data.

To ensure the validity and relevance of the collected data, this study implemented four screening questions. The first question aimed to maintain a balanced gender distribution in the sample, with a target male-to-female ratio variance within ±10%. The second question was designed to limit participants to those aged between 21 and 40 years. The third screening question excluded individuals with less than one year of experience in the hospitality industry. The final question narrowed the focus to operational staff roles, such as housekeeping and front office, excluding positions at higher levels, such as owners and executive managers, or those in specialized departments like marketing.

This study initially attracted a pool of 750 individuals. However, participants who did not meet the specified criteria, submitted incomplete survey responses, or did not pass the attention checks were excluded. After this stringent screening process, the participant pool was narrowed down to 724 individuals. The demographic composition of this final sample was 58.2% male, with a substantial majority (75.83%) aged between 31-35 years. The detailed demographic information is presented in Table 1 of the study.

Table 1. Profiles of Participants

Source: Authors' own creation

| Category | Frequency | Percent | Category | Frequency | Percent |
|---|---|---|---|---|---|
| **Gender** | | | **Age** | | |
| Male | 340 | 46.96 | 21-25 | 37 | 5.11 |
| Female | 384 | 53.04 | 26-30 | 103 | 14.23 |
| | | | 31-35 | 549 | 75.83 |
| | | | 36-40 | 35 | 4.83 |
| **Education** | | | | | |
| High school | 72 | 9.94 | **Income** | | |
| 2-year technical college | 18 | 2.49 | Less than US$ 20,000 | 26 | 3.59 |
| 4-year bachelor's degree | 430 | 59.39 | US$ 20,000 - 29,999 | 80 | 11.05 |
| Master's degree | 190 | 26.24 | US$ 30,000 - 39,999 | 135 | 18.65 |
| Doctorate | 14 | 1.93 | US$ 40,000 - 49,999 | 244 | 33.70 |
| Other | 0 | 0.00 | US$ 50,000 or more | 239 | 33.01 |

Upon clearing the screening phase, participants were briefed on the survey objectives and proceeded to consent before engaging with the Avatar-led Green Training via mobile devices. They were introduced to a scenario featuring Ethan, an avatar, leading the green training within a sustainability-committed hotel environment. Designed to last 10-15 minutes, these sessions were interactive and concluded with an opportunity for participants to seek clarifications from Ethan through a text dialog box. This phase was to be completed alongside a questionnaire within a 96-hour window.

The development of the Avatar-led Green Training courses was a collaborative effort with a leading technology firm based in Hong Kong. In alignment with Kaplan's (2004) recommendations, we conducted an initial evaluation involving a panel of 40 participants to ensure the avatar's appeal and effectiveness. Ethan (see Figure 2) was chosen based on his remarkable consistency in perceived age, attractiveness, realism, and emotional expression. Drawing on the expertise of six seasoned hotel training specialists, we crafted each session to comprehensively address crucial sustainability topics, including energy efficiency, water conservation, recycling, and waste management. To enhance the courses' interactivity and tailor the training experience, we utilized ChatGPT's API, integrating it into a Discord chatbot. This integration facilitated post-training interactions with Ethan, enabling participants to engage in further discussions and seek clarifications about the training content, thereby enriching the overall learning experience.

In this study, the questionnaires gathered demographic details from participants, such as gender, age, education level, and income. Prior to the training, both control variables, including ascribed responsibility, consumer innovativeness, and green self-efficacy, and biospheric value were assessed. After the training, participants' perceptions on the avatar-led green training sessions, and constructs like workplace spirituality, green engagement, OCBE, and green creativity were measured. All these constructs were quantified using seven-point Likert scales, derived from existing research.

Figure 2. Avatar Green Trainer (Ethan)

Source: Authors' own creation

Workplace spirituality was measured as a second-order reflective-reflective factor, encompassing three dimensions: meaningful work, sense of community, and alignment of organizational values. Each of these dimensions was evaluated using four items developed by Milliman et al. (2018). Similarly, green engagement was also measured as a second-order reflective-reflective factor, comprising three dimensions: physical engagement, emotional engagement, and cognitive engagement. These dimensions were assessed using three items for physical engagement, four for emotional engagement, and three for cognitive engagement, following the methodology outlined by Milliman et al. (2018). The construct of OCBE was also measured as a second-order reflective-reflective factor, involving three dimensions: eco-initiatives, eco-helping, and eco-civic engagement with each dimension assessed with three items formulated by Kim et al. (2020). Furthermore, the study utilized five items to measure Avatar-led Green Training, based on Pham et al. (2019), and four items to evaluate biospheric value, adopted from Kamboj et al. (2022), and green creativity was assessed with six items developed by Farooq et al. (2022). A comprehensive list of all these measures, along with their respective sources, is provided in Table 2 of the study.

Additionally, ascribed responsibility, consumer innovativeness, and green self-efficacy were included as control variables. The study used three items adopted from Verma et al. (2019) to measure ascribed responsibility, three items adopted from Kamboj et al. (2022) to measure consumer innovativeness, and five items adopted from Farooq et al. (2022) to measure green self-efficacy.

Table 2. Descriptive statistics, VIF, and outer loadings of indicators

Source: Authors' own creation

| Construct and Items | Mean | SD | Kurtosis | Skewness | VIF | Loadings |
|---|---|---|---|---|---|---|
| **Avatar-led Green Training**, adopted from Pham et al. (2019) | | | | | | |
| TE1: An adequate amount of green training is provided for employees | 5.540 | 1.081 | 1.546 | -0.903 | 1.461 | 0.727 |
| TE2: Employees can have the chance to be trained on environmental issues | 5.584 | 1.120 | 2.295 | -1.158 | 1.542 | 0.749 |
| TE3: Employees receive sufficient green training | 5.616 | 1.123 | 2.167 | -1.203 | 1.573 | 0.761 |
| TE4: Employees can take green training effectively | 5.608 | 1.088 | 1.933 | -1.123 | 1.554 | 0.755 |
| TE5: Employees have many opportunities to take green training | 5.637 | 1.107 | 1.548 | -1.009 | 1.446 | 0.727 |
| **Biospheric Value**, adopted from Kamboj et al. (2022) | | | | | | |
| BV1: I prioritize pollution prevention to conserve natural resources | 5.517 | 1.169 | 1.394 | -1.029 | 1.375 | 0.745 |
| BV2: I respect the Earth by living harmoniously with other species | 5.568 | 1.102 | 1.452 | -0.957 | 1.415 | 0.751 |
| BV3: I value fitting into nature as a part of my unity with it | 5.608 | 1.079 | 1.267 | -0.885 | 1.441 | 0.746 |
| BV4: I am committed to protecting the environment to preserve nature | 5.601 | 1.091 | 1.200 | -0.912 | 1.523 | 0.781 |
| **Workplace Spirituality**, adopted from Milliman et al. (2018) | | | | | | |
| *Meaningful Work* | | | | | | |
| WS1: This work is connected to what I think is important in life | 5.581 | 1.106 | 2.387 | -1.203 | 1.328 | 0.718 |
| WS2: I look forward to coming to work | 5.731 | 1.054 | 1.513 | -0.963 | 1.411 | 0.757 |
| WS3: I see a connection between work and social good | 5.707 | 1.051 | 2.009 | -1.060 | 1.416 | 0.757 |
| WS4: I understand what gives this work personal meaning | 5.660 | 1.051 | 2.450 | -1.152 | 1.365 | 0.746 |
| *Sense of Community* | | | | | | |
| WS5: I feel part of a community | 5.725 | 1.053 | 1.427 | -0.921 | 1.410 | 0.753 |
| WS6: I believe people at work support each other | 5.691 | 1.017 | 1.346 | -0.900 | 1.390 | 0.745 |
| WS7: I think employees are linked with a common purpose | 5.648 | 1.029 | 1.784 | -1.029 | 1.444 | 0.763 |
| WS8: I believe employees genuinely care about each other | 5.675 | 1.060 | 1.605 | -0.979 | 1.464 | 0.763 |

13

*Alignment of Organizational Value*

| | | | | | | |
|---|---|---|---|---|---|---|
| WS9: I feel positive about the values of my hotel | 5.731 | 1.025 | 1.995 | -1.086 | 1.250 | 0.677 |
| WS10: My hotel cares about all its employees | 5.634 | 1.084 | 1.355 | -0.938 | 1.276 | 0.707 |
| WS11: My hotel has a conscience (a sense of right and wrong) | 5.619 | 1.074 | 1.663 | -0.967 | 1.318 | 0.741 |
| WS12: I feel connected with my hotel 's goals | 5.677 | 1.082 | 1.941 | -1.099 | 1.403 | 0.769 |

**Green Engagement**, adopted from Milliman et al. (2018)

*Physical Engagement*

| | | | | | | |
|---|---|---|---|---|---|---|
| GE1: I will exert my full effort towards eco-friendly practices in my job | 5.677 | 1.044 | 1.248 | -0.786 | 1.287 | 0.772 |
| GE2: I will try my hardest to perform well in sustainable tasks at my job | 5.657 | 1.094 | 1.056 | -0.805 | 1.311 | 0.772 |
| GE3: I will strive as hard as I can to complete eco-conscious duties in my job | 5.624 | 1.086 | 0.631 | -0.678 | 1.299 | 0.782 |

*Emotional Engagement*

| | | | | | | |
|---|---|---|---|---|---|---|
| GE4: I am enthusiastic about implementing green practices in my job | 5.707 | 1.080 | 1.828 | -1.114 | 1.376 | 0.739 |
| GE5: I am proud of contributing to sustainability through my job | 5.739 | 1.016 | 1.916 | -1.027 | 1.293 | 0.696 |
| GE6: I feel positive about my role in environmental initiatives at my job | 5.703 | 1.098 | 1.963 | -1.135 | 1.519 | 0.782 |
| GE7: I am excited about engaging in eco-friendly activities in my job | 5.686 | 1.139 | 2.395 | -1.285 | 1.531 | 0.791 |

*Cognitive Engagement*

| | | | | | | |
|---|---|---|---|---|---|---|
| GE8: At work, my mind will be focused on sustainability aspects of my job | 5.727 | 1.076 | 2.005 | -1.147 | 1.534 | 0.819 |
| GE9: At work, I will pay a lot of attention to environmental responsibilities | 5.917 | 1.096 | 2.438 | -1.382 | 1.543 | 0.816 |
| GE10: At work, I will concentrate on green practices in my job | 5.786 | 1.056 | 1.595 | -1.016 | 1.598 | 0.840 |

**Organizational Citizenship Behavior for the Environment**, adopted from Kim et al. (2020) and Luu (2017)

*Eco-Initiatives*

| | | | | | | |
|---|---|---|---|---|---|---|
| OCBE1: In my work, I will weigh the consequences of my actions before doing something that could affect the environment | 5.499 | 1.112 | 1.052 | -0.845 | 1.239 | 0.753 |
| OCBE2: I will voluntarily carry out environmental actions and initiatives in my daily work activities | 5.580 | 1.068 | 1.480 | -0.942 | 1.279 | 0.782 |

| | | | | | | |
|---|---|---|---|---|---|---|
| OCBE3: I will make suggestions to my colleagues about ways to protect the environment more effectively, even when it is not my direct responsibility | 5.499 | 1.179 | 1.519 | -1.017 | 1.279 | 0.763 |

*Eco-Helping*

| | | | | | | |
|---|---|---|---|---|---|---|
| OCBE4: I will spontaneously give my time to help my colleagues take the environment into account in everything they do at work | 5.442 | 1.136 | 0.955 | -0.859 | 1.515 | 0.815 |
| OCBE5: I will encourage my colleagues to adopt more environmentally conscious behavior | 5.518 | 1.115 | 1.359 | -0.967 | 1.522 | 0.819 |
| OCBE6: I will encourage my colleagues to express their ideas and opinions on environmental issues | 5.521 | 1.150 | 1.156 | -0.904 | 1.491 | 0.820 |

*Eco-Civic Engagement*

| | | | | | | |
|---|---|---|---|---|---|---|
| OCBE7: I will actively participate in environmental events organized in and/or by my hotel | 5.515 | 1.083 | 0.978 | -0.818 | 1.308 | 0.794 |
| OCBE8: I will stay informed of my hotel's environmental initiatives | 5.554 | 1.109 | 1.490 | -1.000 | 1.243 | 0.756 |
| OCBE9: I will volunteer for projects, endeavors or events that address environmental issues in my organization | 5.554 | 1.111 | 1.371 | -0.915 | 1.252 | 0.747 |

**Green Creativity**, adopted from Farooq et al. (2022) and Kalyar et al. (2021a)

| | | | | | | |
|---|---|---|---|---|---|---|
| GC1: I will suggest new ways to achieve environmental goals | 5.634 | 1.102 | 1.826 | -1.067 | 1.612 | 0.743 |
| GC2: I will propose new green ideas to improve environmental performance | 5.628 | 1.079 | 1.634 | -0.985 | 1.611 | 0.742 |
| GC3: I will promote and champions new green ideas to others | 5.644 | 1.084 | 0.979 | -0.869 | 1.588 | 0.735 |
| GC4: I will develop adequate plans for the implementation of new green ideas | 5.612 | 1.133 | 1.157 | -0.977 | 1.460 | 0.699 |
| GC5: I will rethink new green ideas | 5.616 | 1.098 | 1.640 | -1.065 | 1.735 | 0.769 |
| GC6: I will find out creative solutions to environmental problems | 5.587 | 1.164 | 1.399 | -1.024 | 1.523 | 0.718 |

Note: SD = Standard deviation; VIF = variance inflation factor.

## 4. Results

### 4.1. Data analysis

Data analysis for this study was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS4 software. PLS-SEM, an analytical method combining principal component analysis with ordinary least squares regressions, is particularly adept at analyzing more complex model structures, making it suitable for theoretical extension or integration (Hair et al., 2019). To analyze the three reflective endogenous higher-order factors, a disjoint two-stage approach was utilized. The initial stage involved the exclusion of the higher-order construct, focusing solely on first-order constructs to derive latent variable scores. Subsequently, in the second stage, these scores are treated as manifest variables for the higher-order construct. This process simplifies the first-order constructs to single-item entities, effectively addressing statistical concerns such as multicollinearity and practical issues like double counting. This two-stage methodology is preferred for its enhanced accuracy in parameter recovery of path pointing, as compared to the repeated indicators approach (Sarstedt et al., 2019).

### 4.2. Assessing the first-order measurement model

The validity of the first-order measurement models in this study was assessed across several key parameters: internal consistency reliability, indicator loadings, and convergent validity. To evaluate the reliability and internal consistency of the measurement model, composite reliability (CR) were utilized. CR is considered as a more accurate measure of reliability compared to Cronbach's alpha, which may yield conservative estimates due to its uniform weighting of all items (Hair et al., 2019). Despite some constructs having Cronbach's alpha slightly below the 0.7 threshold, the overall reliability and internal consistency of the constructs were deemed satisfactory to good. In Table 2, it was observed that all indicators, except for AOV1, EE2, and GC4, had loadings above 0.7, indicating a substantial proportion of the variance in each indicator was explained by its associated latent construct. Furthermore, the Average Variance Extracted (AVE) was employed to ascertain convergent validity, as shown in Table 3. All AVE values surpassed the threshold of 0.5, indicating adequate convergent validity. Discriminant validity was determined using the Fornell and Larcker (1981) Criterion, which stipulates that the square root of the AVE for each latent variable should exceed its highest correlation with any other variable, with a threshold lower than 0.90.

Table 3. Internal consistency, reliability, and convergent validity of the first-order factors

Source: Authors' own creation

| Constructs | a | CR | AVE |
|---|---|---|---|
| Avatar-led Green Training | 0.798 | 0.861 | 0.554 |
| Biopheric Value | 0.75 | 0.842 | 0.571 |
| Meaningful Work | 0.733 | 0.833 | 0.555 |
| Sense of Community | 0.751 | 0.842 | 0.572 |
| Alignment of Organizational Value | 0.697 | 0.815 | 0.524 |
| Physical Engagement | 0.668 | 0.819 | 0.601 |
| Emotional Engagement | 0.744 | 0.839 | 0.567 |
| Cognitive Engagement | 0.766 | 0.865 | 0.681 |
| Eco-Initiatives | 0.647 | 0.81 | 0.586 |
| Eco-Helping | 0.753 | 0.858 | 0.669 |
| Eco-Civic Engagement | 0.647 | 0.81 | 0.586 |
| Green Creativity | 0.829 | 0.875 | 0.54 |

Note. a = Cronbach's alpha; CR= composite reliability; AVE = average variance extracted.

Table 4. Internal consistency, reliability, convergent validity of the second-order factors

Source: Authors' own creation

| Constructs | Loadings | a | CR | AVE |
|---|---|---|---|---|
| **Workplace Spirituality** | | 0.932 | 0.957 | 0.880 |
| Meaningful Work | 0.936 | | | |
| Sense of Community | 0.935 | | | |
| Alignment of Organizational Value | 0.943 | | | |
| **Green Engagement** | | 0.895 | 0.934 | 0.826 |
| Physical Engagement | 0.882 | | | |
| Emotional Engagement | 0.928 | | | |
| Cognitive Engagement | 0.916 | | | |
| **OCBE** | | 0.904 | 0.940 | 0.839 |
| Eco-Initiatives | 0.911 | | | |
| Eco-Helping | 0.916 | | | |
| Eco-Civic Engagement | 0.921 | | | |

Table 5. Fornell and Larcker Criterion

Source: Authors' own creation

| Constructs | GT | BV | WS | GE | OCBE | GC |
|---|---|---|---|---|---|---|
| Avatar-led Green Training (GT) | 0.744 | | | | | |
| Biopheric Value (BV) | 0.601 | 0.756 | | | | |
| Workplace Spirituality (WS) | 0.619 | 0.611 | 0.938 | | | |
| Green Engagement (GE) | 0.604 | 0.598 | 0.667 | 0.909 | | |
| OCBE | 0.636 | 0.625 | 0.677 | 0.661 | 0.916 | |
| Green Creativity (GC) | 0.626 | 0.586 | 0.670 | 0.672 | 0.673 | 0.735 |

## 4.3. Assessing the second-order measurement model

In our model, three reflective second-order endogenous constructs were analyzed: workplace spirituality, green engagement, and OCBE. The evaluation of second stage began on the reflective measurement models of these higher-order constructs. As indicated in Table 4, all constructs demonstrated significant and substantial loadings. These loadings contributed to strong reliability, internal consistency, and convergent validity. The CR values for both constructs exceeded the threshold of 0.7, while the AVE values surpassed the critical value of 0.5, as shown in Table 4. Discriminant validity was assessed using the Fornell and Larcker (1981) Criterion. Table 5 reveals that there is acceptable discriminant validity across the causally linked factors at the highest levels, the first-order factors (Avatar-led Green Training, biospheric value, and green creativity) and the second-order factors (workplace spirituality, green engagement, and OCBE).

## 4.4. Assessing structural models

The use of self-report surveys in our study introduces the potential risk of common method bias, which may cause indicators to share a degree of common variation. To address this concern, this study implemented Harman's single factor test and common latent factor (CLF) (Podsakoff et al., 2003). No common method bias was identified. In addition, we thoroughly examined multivariate assumptions including outliers, normality, collinearity, and homoscedasticity. These were assessed using Cook's distance, skewness and kurtosis analysis, the full collinearity test, and the Breusch–Pagan test, respectively. These evaluations did not detect any significant issues.

Following the instruction of Hu and Bentler (1999), the model's fit was assessed using the SRMR, with a value of 0.066 indicating an acceptable fit. Hypotheses H1–H6 were tested using a bootstrapping method with 5,000 subsamples (Chin, 1998), as displayed in Table 6. All relationships in the structural model were significant, with Avatar-led Green Training notably influencing workplace spirituality ($\beta = 0.485$, t = 6.276). An interaction effect between green training and biospheric value on workplace spirituality was observed ($\beta = 0.062$, t = 2.188). Furthermore, the study confirmed positive correlations between workplace spirituality and green engagement ($\beta = 0.631$, t = 8.214), as well as green training and green engagement ($\beta = 0.288$, t = 3.249). Therefore, workplace spirituality partially mediated the relationship between Avatar-led Green Training and green engagement ($\beta = 0.306$, t = 4.946). Moreover, green engagement is positively related to OCBE ($\beta = 0.861$, t = 57.526) and green creativity ($\beta = 0.469$, t = 9.197). Lastly, higher levels of OCBE were associated with greater green creativity ($\beta = 0.470^{***}$, t = 9.216), indicating a partial mediation of the relationship between green engagement and green creativity by OCBE ($\beta = 0.404^{***}$, t = 9.394).

Table 6. Hypotheses tests

Source: Authors' own creation

| Hypotheses | Path coefficients | | | | Supported |
|---|---|---|---|---|---|
| | β | SD | T | P | |
| H1. Avatar-led Green Training → Workplace Spirituality | 0.485*** | 0.077 | 6.276 | 0.000 | ✓ |
| H2. Biospheric Value × Avatar-led Green Training → Workplace Spirituality | 0.062* | 0.031 | 2.188 | 0.029 | ✓ |
| H3a. Workplace Spirituality → Green Engagement | 0.631*** | 0.077 | 8.214 | 0.000 | ✓ |
| H3b. Avatar-led Green Training → Green Engagement | 0.288*** | 0.087 | 3.249 | 0.001 | ✓ |
| H4. Green Engagement → OCBE | 0.861*** | 0.015 | 57.526 | 0.000 | ✓ |
| H5. Green Engagement → Green Creativity | 0.469*** | 0.051 | 9.197 | 0.000 | ✓ |
| H6. OCBE → Green Creativity | 0.470*** | 0.051 | 9.216 | 0.000 | ✓ |

Note. β = unstandardized coefficient; SD=Standard deviation; T = T statistics; P = P values; * P ≤ 0.05, ** P ≤ 0.01, *** P ≤ 0.001.

## 5. Conclusion

This study explores the impact of Avatar-led Green Training and employee biospheric values on workplace spirituality, and how this, in turn, affects green engagement, OCBE, and green creativity. Our study delineates a significant mediated relationship wherein Avatar-led Green Training enhances green engagement through the intermediary of workplace spirituality, highlighting the pivotal role of meaningful work, community, and value alignment in catalyzing environmental initiatives among employees. This mediating effect aligns with the Job Demands-Resources (JD-R) Theory, suggesting that enriching workplace spirituality via targeted training programs serves as a crucial job resource, fostering a deep-seated commitment to sustainability practices (Bakker & Demerouti, 2007). The findings underscore the transformative potential of such training in not merely imparting environmental knowledge and skills but also in cultivating a spiritually fulfilling work environment that propels green engagement (Milliman et al., 2018; Pham et al., 2019). Thus, our research contributes to the discourse on sustainable training by emphasizing the importance of integrating the spiritual dimensions of work into training paradigms to achieve more profound and lasting environmental stewardship (Anwar et al., 2020; Hu et al., 2022).

Moreover, the substantial correlation observed between workplace spirituality and green engagement not only corroborates but expands upon the existing dialogue within the JD-R Theory framework. Similar to Milliman et al. (2018), our findings underline the essential nature of fulfilling work life in fostering a deeply engaged and environmentally proactive workforce. However, we advance the discussion by identifying workplace spirituality as a mediator between Avatar-led Green Training and green engagement, offering a novel

perspective on the pathway through which training initiatives translate into tangible environmental actions and attitudes.

The positive association we discovered between green engagement and both OCBE and green creativity resonates with the findings of Hu et al. (2022) and Luu (2019), who emphasize the critical role of employee engagement in driving sustainable innovation. Our study contributes to this body of knowledge by elucidating the mediating function of OCBE in the relationship between green engagement and green creativity, an insight that accentuates the complex mechanisms underpinning sustainable behaviors in organizational settings.

*5.1. Theoretical Implications*

The theoretical implications of this study on the impact of Avatar-led Green Training in the hospitality sector provide a substantial contribution to the literature, particularly within the frameworks of the JD-R Theory and green human resource management. By exploring relationships between Avatar-led Green Training, workplace spirituality, green engagement, OCBE, and green creativity, our research offers several key theoretical advancements.

Firstly, our study extends the JD-R Theory by integrating Avatar-led Green Training as a significant job resource that not only enhances employees' skills and knowledge on environmental sustainability but also enriches workplace spirituality. This finding underscores the theory's proposition that job resources are critical in fostering a motivational process leading to positive workplace outcomes, such as enhanced engagement and performance (Bakker & Demerouti, 2007). The mediation effect of workplace spirituality between Avatar-led Green Training and green engagement highlights the importance of meaningful work, sense of community, and alignment with organizational values in driving environmental initiatives (Milliman et al., 2018; Pham et al., 2019).

Secondly, the moderating role of biospheric values on the effectiveness of Avatar-led Green Training in fostering workplace spirituality offers a new perspective on the alignment between individual values and organizational sustainability efforts. This aspect enriches our understanding of how intrinsic motivation, influenced by personal values, can amplify the impact of green training initiatives (Giacalone & Jurkiewicz, 2010; Bayighomog & Arasli, 2022).

Additionally, our findings contribute to the discourse on green human resource management by illustrating how Avatar-led Green Training can be a pivotal practice in promoting environmental stewardship. The study's insights into how such training enhances green engagement, OCBE, and green creativity not only align with existing research on the benefits of green training (Anwar et al., 2020; Cabral & Jabbour, 2020) but also introduce the concept of using AI-powered avatars as an innovative training method to overcome challenges in the post-pandemic landscape.

*5.2. Managerial Implications*

Integrating avatar-led green training within the hospitality industry serves as a strategic solution to overcome significant challenges like training accessibility, consistency, and engagement. While it may not fully replicate the effectiveness of human-led sessions, avatar technology uniquely fosters a deeper connection and sense of purpose among employees towards environmental goals. Its ability to simulate interactive human-like interactions

provides flexibility and scalability unmatched by traditional methods, often limited by expert availability and logistical constraints. Moreover, avatar-led sessions surpass standard online courses by creating parasocial relationships and offering customized, interactive learning experiences, thus fostering a more engaged and sustainability-committed workforce.

Hotel executives and managers stand to gain significantly from implementing avatar-led green training programs. Such training offers a scalable, consistent, and engaging learning experience that can be deployed across multiple locations, ensuring uniformity in the quality and content of environmental stewardship education. Avatar-led training ensures that every employee, regardless of their hotel's size or location, has access to the same high-quality resources. This consistency is pivotal for brands aiming to maintain stringent sustainability standards across their operations. Additionally, avatars offer the flexibility to update and customize training modules as environmental standards evolve, ensuring that staff remains at the forefront of sustainable practices without incurring significant additional costs.

HR and training professionals in the hospitality industry are tasked with the critical role of developing and maintaining a workforce that is not only skilled in their roles but also committed to the organization's sustainability goals. Unlike traditional training methods, which may not cater to individual learning paces or offer the interactivity necessary to fully engage participants, avatar-led training can adapt to individual needs, ensuring more effective learning and retention of information. This personalized approach not only enhances the training experience but also fosters a stronger connection between employees and the hotel's environmental goals. Furthermore, the use of avatars in training can help overcome logistical challenges, such as scheduling conflicts and the need for training across various shifts, making it a versatile solution for hotels of all sizes.

*5.3. Limitation and Future Research*

This study provides valuable insights into the use of Avatar-led Green Training within the hospitality industry, yet it also highlights areas ripe for further investigation. A notable limitation is the study's scope regarding cultural and demographic diversity, which may influence the effectiveness of avatar-led training. The characteristics of the avatars used—appearance, gender, non-verbal cues, voice, and personality—may not encompass the diversity required for universal applicability, potentially affecting the generalizability of the findings. Moreover, future research could test out a fully integrated AI-powered avatar training system in real-world settings, thereby providing more comprehensive insights. Additionally, comparing the effectiveness of avatar-led training with traditional methods could offer deeper understanding into its impact on promoting sustainable behaviors among employees. Longitudinal studies would be particularly valuable in assessing the long-term benefits of avatar-led training on enhancing biospheric values, employee engagement, and commitment to sustainability practices.

**Reference**

Aboramadan, M., Kundi, Y., & Farao, C. (2021). Examining the effects of environmentally-specific servant leadership on green work outcomes among hotel employees: The mediating role of climate for green creativity. *Journal of Hospitality Marketing & Management*, *30*(8), 929-956.

Akel, G., & Noyan, E. (2024). Exploring the criteria for a green and smart hotel: insights from hotel managers' perspectives. Journal of Hospitality and Tourism Insights.

Anwar, N., Mahmood, N., Yusliza, M., Ramayah, T., Faezah, J., & Khalid, W. (2020). Green Human Resource Management for organisational citizenship behaviour towards the environment and environmental performance on a university campus. *Journal of Cleaner Production*, *256*, 120401.

Ashmos, D., & Duchon, D. (2000). Spirituality at work: A conceptualization and measure. *Journal of Management Inquiry*, *9*(2), 134-145.

Bayighomog, S., & Arasli, H. (2022). Reviving employees' essence of hospitality through spiritual wellbeing, spiritual leadership, and emotional intelligence. *Tourism Management*, *89*, 104406.

Bhutto, T., Farooq, R., Talwar, S., Awan, U., & Dhir, A. (2021). Green inclusive leadership and green creativity in the tourism and hospitality sector. *Journal of Sustainable Tourism*, *29*(10), 1716-1737.

Boiral, O., & Paillé, P. (2012). Organizational citizenship behaviour for the environment: Measurement and validation. *Journal of Business Ethics*, *109*, 431-445.

Chen, X., & Lee, T. (2022). Potential effects of green brand legitimacy and the biospheric value of eco-friendly behavior on online food delivery: A mediation approach. *International Journal of Contemporary Hospitality Management*, *34*(11), 4080-4102.

Choi, H., Jang, J., & Kandampully, J. (2015). Application of the extended VBN theory to understand consumers' decisions about green hotels. *International Journal of Hospitality Management*, *51*, 87-95.

Choi, Y., Mehraliyev, F., & Kim, S. (2020). Role of virtual avatars in digitalized hotel service. *International Journal of Contemporary Hospitality Management, 32*(3), 977-997.

Demerouti, E., Bakker, A., Nachreiner, F., & Schaufeli, W. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, *86*(3), 499.

Dwivedi, Y, Pandey, N., Currie, W., & Micu, A. (2024). Leveraging ChatGPT and other generative artificial intelligence (AI)-based applications in the hospitality and tourism industry: Practices, challenges, and research agenda. *International Journal of Contemporary Hospitality Management*, *36*(1), 1-12.

Farooq, R., et al. (2022). Do green human resource management and self-efficacy facilitate green creativity? A study of luxury hotels and resorts. *Journal of Sustainable Tourism, 30*(4), 824-845.

Fornell, C., & Larcker, D. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39-50.

Giacalone, R., & Jurkiewicz, C.(2010). The science of workplace spirituality. In Handbook of workplace spirituality and organizational performance (pp. 19-42). Routledge, London.

Global Reporting Initiative (GRI). (2023). The global state of sustainable business 2023. Retrieved from GRI website.

Gordon, S. (2020). Organizational support versus supervisor support: The impact on hospitality managers' psychological contract and work engagement. *International Journal of Hospitality Management*, *87*, 102374.

Hair, J., Risher, J., Sarstedt, M., & Ringle, C. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2-24.

Haldorai, K., Kim, W., Chang, H., & Li, J. (2020). Workplace spirituality as a mediator between ethical climate and workplace deviant behavior. *International Journal of Hospitality Management*, *86*, 102372.

Hao, F. (2020). The landscape of customer engagement in hospitality and tourism: A systematic review. *International Journal of Contemporary Hospitality Management*, *32*(5), 1837-1860.

Hu, X., Khan, S., Huang, S., Abbas, J., Matei, M. C., & Badulescu, D. (2022). Employees' green enterprise motivation and green creative process engagement and their impact on green creative performance. *International Journal of Environmental Research and Public Health*, *19*(10), 5983.

Hu, L, and Bentler, P. (1998). Fit Indices in Covariance Structure Modeling: Sensitivity to Underparameterized Model Misspecification, *Psychological Methods*, *3*(4): 424-453.

International Labour Organization (ILO). (2022). Sustainable development, decent work, and green jobs. Retrieved from ILO website.

Jiang, Y., & Wen, J. (2020). Effects of COVID-19 on hotel marketing and management: A perspective article. *International Journal of Contemporary Hospitality Management*, *32*(8), 2563-2573.

Kahn, W. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, *33*(4), 692-724.

Kalyar, M., Ali, F., & Shafique, I. (2021). Green mindfulness and green creativity nexus in hospitality industry: Examining the effects of green process engagement and CSR. *International Journal of Contemporary Hospitality Management*, *33*(8), 2653-2675.

Kamboj, S., Matharu, M., Lim, W., Ali, F., & Kumar, S. (2022). Consumer adoption of green hotels: Understanding the role of value, innovation, and involvement. *Journal of Hospitality Marketing & Management*, *31*, 1-31.

Karatepe, T., Ozturen, A., Karatepe, O., Uner, M., & Kim, T. (2022). Management commitment to the ecological environment, green work engagement, and their effects on hotel employees' green work outcomes. *International Journal of Contemporary Hospitality Management*, *34*(8), 3084-3112.

Khan, N., Acuti, D., Lemarie, L., & Viglia, G. (2024). The intention-behaviour gap in sustainable hospitality: a critical literature review. International Journal of Contemporary Hospitality Management.

Kim, W., McGinley, S., Choi, H., & Agmapisarn, C. (2020). Hotels' environmental leadership and employees' organizational citizenship behavior. *International Journal of Hospitality Management*, *87*, 102375.

Luu, T. (2019). Building employees' organizational citizenship behavior for the environment: The role of environmentally-specific servant leadership and a moderated mediation mechanism. *International Journal of Contemporary Hospitality Management*, *31*(1), 406-426.

Luu, T. T. (2022). Fostering green service innovation perceptions through green entrepreneurial orientation: The roles of employee green creativity and customer involvement. *International Journal of Contemporary Hospitality Management*, *34*(7), 2640-2663.

Milliman, J., Czaplewski, A., & Ferguson, J. (2003). Workplace spirituality and employee work attitudes: An exploratory empirical assessment. *Journal of Organizational Change Management*, *16*(4), 426-447.

Milliman, J., Gatling, A., & Kim, J. (2018). The effect of workplace spirituality on hospitality employee engagement, intention to stay, and service delivery. *Journal of Hospitality and Tourism Management*, *35*, 56-65.

Molina-Collado, A., Santos-Vijande, M., Gómez-Rico, M., & Madera, J. (2022). Sustainability in hospitality and tourism: A review of key research topics from 1994 to 2020. *International Journal of Contemporary Hospitality Management*, *34*(8), 3029-3064.

Öğretmenoğlu, M., Akova, O., & Göktepe, S. (2022). The mediating effects of green organizational citizenship on the relationship between green transformational leadership and green creativity: Evidence from hotels. *Journal of Hospitality and Tourism Insights*, *5*(4), 734-751.

Park, H., Lee, M., & Back, K. J. (2023). A critical review of technology-driven service innovation in hospitality and tourism: current discussions and future research agendas. International Journal of Contemporary Hospitality Management, 35(12), 4502-4534.

Pauw, L., Sauter, D., van Kleef, G., Lucas, G., Gratch, J., & Fischer, A. (2022). The avatar will see you now: Support from a virtual human provides socio-emotional benefits. *Computers in Human Behavior*, *136*, 107368.

Pham, N., Tučková, Z., & Jabbour, C. (2019). Greening the hospitality industry: How do green human resource management practices influence organizational citizenship behavior in hotels? A mixed-methods study. *Tourism Management*, *72*, 386-399.

Radic, A., Arjona-Fuentes, J., Ariza-Montes, A., Han, H., & Law, R. (2020). Job demands–job resources (JD-R) model, work engagement, and well-being of cruise ship employees. *International Journal of Hospitality Management*, *88,* 102518.

Sarstedt, M., Hair Jr, J., Cheah, J, Becker, J., & Ringle, C. (2019). How to specify, estimate, and validate higher-order constructs in PLS-SEM. *Australasian Marketing Journal*, *27*(3), 197-211.

Sharma, A., Saulais, L., & Huang, Y. (2024). Sustainable consumer choices–critical reflection on hospitality and tourism. International Journal of Contemporary Hospitality Management, 36(6), 1784-1797.

Sharma, G. D., Taheri, B., Gupta, M., & Chopra, R. (2023). Over 33 years of the hospitality research: a bibliometric review of the international journal of contemporary hospitality management. International Journal of Contemporary Hospitality Management, 35(7), 2564-2589.

Sharma, T., Chen, J. S., Ramos, W. D., & Sharma, A. (2024). Visitors' eco-innovation adoption and green consumption behavior: the case of green hotels. International Journal of Contemporary Hospitality Management, 36(4), 1005-1024.

Shehawy, Y. M. (2022). Current workplace issues and behaviours in tourism and hospitality: moderating role of empowering leadership. Current Issues in Tourism, 25(10), 1627-1648.

Shehawy, Y. M. (2023). In green consumption, why consumers do not walk their talk: a cross cultural examination from Saudi Arabia and UK. Journal of Retailing and Consumer Services, 75, 103499.

Srivastava, S., & Gupta, P. (2022). Workplace spirituality as panacea for waning well-being during the pandemic crisis: A SDT perspective. *Journal of Hospitality and Tourism Management*, *50*, 375-388.

Tanveer, M., Yusliza, M., & Fawehinmi, O. (2024). Green HRM and hospitality industry: challenges and barriers in adopting environmentally friendly practices. *Journal of Hospitality and Tourism Insights*, *7*(1), 121-141.

United Nations Environment Programme (UNEP). (2022). Sustainable hospitality: A green future. Retrieved from UNEP website.

U.S. Green Building Council (USGBC). (2023). Green workforce report. Retrieved from USGBC website.

Verma, V., Chandra, B., & Kumar, S. (2019). Values and ascribed responsibility to predict consumers' attitude and concern towards green hotel visit intention. *Journal of Business Research*, *96*, 206-216.

Wang, X., Butt, A., Zhang, Q., Shafique, M., Ahmad, H., & Nawaz, Z. (2020). Gaming avatar can influence sustainable healthy lifestyle: Be like an avatar. *Sustainability*, *12*(5), 1998.