1. INTRODUCTION

In the contemporary era, with a heightened emphasis on environmental issues and sustainability, organizations in diverse sectors are increasingly acknowledging the significance of embracing environmentally responsible practices (Suriyankietkaew, Krittayaruangroj, & Iamsawan, 2022). The acknowledgment of finite resource availability, the impacts of climate change, and societal pressures to embrace eco-friendly approaches have triggered a paradigm shift in how businesses conduct their operations (Ismail, 2023). In this evolving landscape, Green Human Resource Management (HRM) has surfaced as a strategic approach that harmonizes human resource practices with environmentally sustainable objectives (Bahuguna, Srivastava, & Tiwari, 2023). While the impact of Green HRM practices on ecological results is well-documented, its effect on the broader workforce remains a pivotal area for investigation (Tuan, 2022). Furthermore, the capacity of Green HRM to influence not just environmental consequences but also employee engagement and commitment has become a subject of growing interest (Iram, Kiliç, & Adeshola, 2022; Nurhayati, et al, 2022a).

Green HRM practices encompass a broad spectrum of initiatives designed to diminish an organization's carbon footprint, preserve natural resources, and cultivate environmentally conscious behaviours among employees (Ercantan & Eyupoglu, 2022). These practices encompass various aspects, from advocating recycling and energy efficiency to integrating sustainability into the organizational culture. While the influence of Green HRM practices on environmental results is extensively studied, their impact on the agricultural workforce is a research area that has received limited attention (Ansari, Farrukh, & Raza, 2021). Despite the increasing significance of sustainability practices, there remains a significant gap in empirical research regarding how Green HRM practices impact the workforce, regardless of the industry (Bahuguna, Srivastava, & Tiwari, 2023). While studies in diverse sectors show the positive impact of Green HRM on environmental results, a more comprehensive understanding of how these practices affect employees across various industries is required. The workforce, regardless of the sector, plays an integral role in every organization's operations (Tuan, 2022). Exploring how Green HRM practices influence employee engagement, job satisfaction, organizational commitment, and performance offers valuable insights into the broader potential of eco-friendly HR strategies.

In this study, Green HRM practices pertain to policies and actions taken by agricultural organizations to reduce...
environmental impact and promote sustainability (Ojo, Tan, & Alia, 2022). These practices include eco-friendly recruitment, environmental training, green performance appraisals, and the cultivation of environmentally responsible leadership (Muisyo, Qin, Ho, & Julius, 2022). This study will evaluate the impact of Green HRM Practices on three key dependent variables: job satisfaction, which is crucial for employee well-being, retention, and workforce stability, directly influencing performance (Siswanto, Basalamah, Mus, & Semmalla, 2020). Organizational commitment measures the extent of employee dedication to the organization's goals and values (Mishra & Tikoria, 2021). It's considered a pivotal factor influencing employee retention and performance (Dawy, Yohana, & Widodo, 2022). Environmental performance gauges the alignment of an organization's operations and practices with sustainability and environmentally responsible objectives (Moonecapen, Abhayawansa, & Mamode Khan, 2022).

Research consistently reveals that employee engagement plays a crucial role in explaining how Green HRM Practices affect various organizational outcomes (Ercantan & Eyupoglu, 2022; Scharp, Bakker, & Breevaart, 2022). Employee engagement, a multifaceted concept, represents the emotional and intellectual commitment of employees to their work and the organization (Quek et al., 2021). This increased engagement is closely linked to higher job satisfaction, improved productivity, and the overall well-being of employees (Vakira, Shereni, Ncube, & Ndlovu, 2023). Employee engagement serves as the conduit through which Green HRM Practices channel their positive impact, creating a work environment where employees are not only committed to their roles but also deeply committed to the organization's sustainability and environmental objectives (Ercantan & Eyupoglu, 2022). Additionally, organizational culture, as a moderator, will be examined to understand its impact on the relationship between Green HRM Practices, Employee Engagement, and the dependent variables. An organization's culture, encompassing its values, norms, and practices, can either support or impede the effectiveness of Green HRM initiatives (Siagian, Setyadi, Hendri, & Fitrio, 2022).

Moreover, this study focuses on employees within agriculture sector organizations. The agricultural sector, vital for global sustenance, confronts distinct challenges in the 21st century, including climate change, resource depletion, and environmental degradation, which necessitate urgent attention (Bolarinwa, Ajayi, Adenuga, & Obayelu, 2023; Nurhayati, et al, 2022b). To address these challenges, agricultural organizations are increasingly acknowledging the importance of embracing environmentally responsible practices (Shen, Wang, Boussemart, & Hao, 2022). This recognition is embodied in Green HRM, a strategic approach that aligns human resource practices with ecological sustainability. Green HRM aims to reduce an organization's carbon footprint, preserve natural resources, and promote environmentally conscious behaviours among employees (Muisyo, Qin, Ho, & Julius, 2022). Although Green HRM practices have proven effective in diverse sectors, their influence on the agricultural workforce is an underexplored area. Empirical research on Green HRM within the agricultural context has been limited to date, despite the sector's susceptibility to environmental changes and the urgent global demand for sustainable agricultural practices (Rejeb, Abdollahi, Rejeb, & Treiblmaier, 2022; Mihrani et al 2023). Moreover, agricultural labour typically entails extended exposure to natural elements and physical demands that differ from those in other sectors (Sunberg & Giller, 2022). This creates a substantial knowledge gap concerning the consequences of Green HRM practices in the agricultural sector.

2. AIMS AND OBJECTIVES

To bridge the existing literature gap and address the research problem, this study has established the following research objectives:

• To examine how Green HRM practices affect employee job satisfaction, organizational commitment, and environmental performance.
• To assess the effect of Green HRM practices on employee engagement in the agricultural industry.
• To explore how employee engagement acts as a mediator in the connection between Green HRM practices and job satisfaction, organizational commitment, and environmental performance in the agricultural workforce.
• To scrutinize how organizational culture moderates the relationship between Green HRM practices and employee engagement.

The results of this study have the potential to enhance our comprehension of how Green HRM can be customized to meet the distinctive needs of the agricultural sector. This, in turn, can aid in bolstering the resilience and sustainability of this crucial industry while promoting a more engaged and committed workforce.

3. RESEARCH SIGNIFICANCE

3.1 Green HRM Practices and Outcomes

Green HRM practices aim to incorporate environmental sustainability into an organization’s HR policies and procedures. These encompass initiatives like environmentally conscious recruitment, green training programs, and the cultivation of environmentally responsible leadership (Irani & Kilic, 2022; Nurhayati, et al., 2022c). The underlying concept is that these practices, by aligning the workforce with the organization's environmental objectives, are expected to impact employee attitudes and behaviours, subsequently influencing job satisfaction, organizational commitment, and environmental performance. Prior research has confirmed a positive correlation between Green HRM practices and job satisfaction (Kuhrmann, Fernández, & Daneva, 2017). When employees perceive their organization's active involvement in environmentally responsible initiatives, it can boost their overall job satisfaction (Liggans et al., 2019). Research by Larhav (2021) shows that employees who believe their
organization is genuinely dedicated to environmental sustainability tend to have higher job satisfaction. Additionally, when employees actively engage in these initiatives, they are more inclined to perceive their contribution to a broader environmentally responsible cause. This sense of purpose and alignment with the organization’s values should naturally result in increased job satisfaction and stronger organizational commitment (Ngo & Ngo, 2023).

Furthermore, Green HRM practices can impact organizational commitment. When employees perceive their organization as environmentally responsible, they are more inclined to experience commitment to the organization’s mission and values (Ribeiro et al., 2022). The study by Faisal (2023) uncovered a favourable correlation between Green HRM practices and employees’ organizational commitment. Concurrently, it is anticipated that Green HRM practices will play a role in enhancing an organization’s environmental performance. Employees who actively engage in eco-friendly initiatives as a consequence of these practices are poised to exert a positive influence on the organization’s environmental performance (Ercantan & Eyupoglu, 2022). Scholars such as Alreahi et al. (2023) endorse this concept, demonstrating the potential of employee participation in environmental practices to improve an organization’s environmental results. Moreover, employees actively involved in eco-friendly endeavours within the organization may exhibit greater awareness of their individual environmental behaviours, as noted by (Abualigah et al., 2023). This increased awareness, coupled with the organizational culture that fosters environmental responsibility, should logically lead to enhanced environmental performance. In line with the conceptual framework, supported by relevant literature, and logical reasoning, we posit the following hypotheses:

**Hypothesis 1**: Green HRM practices positively impact a) job satisfaction, b) organizational commitment among employees in organizations, and c) environmental performance within organizations.

### 3.2 Impact of Green HRM Practices on Employee Engagement

Green HRM practices align the values and objectives of employees with those of the organization. Research by Rungruangjit, Chankson, and Charoenpornpanichkul (2023) underscores the significance of harmonizing employee values with organizational values to promote engagement. Employees who perceive alignment between their values and the organization’s green initiatives are more likely to engage actively. Moreover, research indicates that Green HRM practices frequently entail involving employees in environmentally responsible actions, including recycling, conservation, and sustainable practices. Participating in such activities cultivates a sense of engagement and ownership (Begum, Ashfaq, Xia, & Awan, 2022). Fostering a positive organizational culture that values sustainability enhances employee engagement. Research also indicates that organizations prioritizing environmental responsibility often experience higher levels of employee engagement (Kuzior, Kettler, & Rab, 2022). Green HRM practices intrinsically encourage environmentally responsible attitudes and behaviours. This emphasis on sustainability aligns with the values of a growing number of employees who are increasingly environmentally conscious (Dhir et al., 2021). Hence, they tend to be more engaged at work when they view their organization as socially and environmentally responsible. Employee participation in environmentally positive activities fosters a sense of ownership and contribution, naturally leading to higher engagement (Szabo & Webster, 2021). A positive organizational culture fosters employee engagement. Therefore, it is posited that:

**Hypothesis 2**: Green HRM practices have a positive impact on employee engagement within organizations.

### 3.3 Employee Engagement, Job Satisfaction, Organizational Commitment, and Environmental Performance

Employee engagement is defined by employees’ emotional and intellectual dedication to their work and the organization (Scharp, Bakker, & Breevaart, 2022). This concept implies that engaged employees are more likely to experience job satisfaction, organizational commitment, and make positive contributions to environmental performance (Kuzior, Kettler, & Rab, 2022). The connection between employee engagement and job satisfaction is firmly established. When employees are actively engaged and dedicated to their work, they are more inclined to derive personal fulfilment from it (Aboramadan, Hamid, Kundi, & El Hamalawi, 2022). Studies further demonstrate that engaged employees exhibit a heightened investment in their work, which logically results in increased job satisfaction (Quek et al., 2021).

Concurrently, employee engagement frequently precedes greater organizational commitment. Engaged employees are more prone to align themselves with the organization’s values and objectives (Lartey, 2021). Likewise, Aboramadan, Hamid, Kundi, and El Hamalawi (2022) research has shown that engaged employees display loyalty and dedication to their organization, nurturing a strong sense of attachment. This logical correlation suggests that engaged employees are more likely to demonstrate commitment to the organization. Moreover, engaged employees who exhibit commitment to the organization are also more inclined to engage in and support green initiatives. Their heightened sense of responsibility and commitment extends to environmentally responsible behaviours, ultimately contributing to enhanced environmental performance (Kuzior, Kettler, & Rab, 2022). Drawing from conceptualizations, existing literature, and logical reasoning, we formulate the following hypotheses:

**Hypothesis 3**: Employee engagement has a positive impact on a) job satisfaction, b) organizational commitment among employees in organizations, and c) environmental performance within organizations.

### 3.4 Mediatary Role of Employee Engagement

Green HRM Practices are anticipated to exert a positive influence on Employee Engagement by emphasizing environmentally responsible behaviour and sustainability. Consequently, engaged employees should encounter heightened Job Satisfaction (Boccoli, Gastaldi, & Corso, 2023). The rationale behind this connection is
the sense of fulfilment and achievement that engaged employees derive from their work, particularly when it aligns with their values. When employees are deeply engaged through green initiatives, they are more prone to experiencing elevated levels of satisfaction (Quek et al., 2021). Concurrently, Green HRM practices aim to cultivate a sense of shared values and engagement among employees by promoting sustainability and environmental stewardship (Saks, 2022). As employees become increasingly engaged, they tend to develop greater commitment to the organization’s objectives and mission. Green HRM Practices, with their emphasis on engagement and environmentally responsible conduct, are likely to enhance employee engagement (Paul & Singh, 2023). Engaged employees are more prone to actively participate in environmentally friendly practices, a contribution that can lead to improved environmental performance (Piligrimienė et al., 2020). It is anticipated that elevated levels of Employee Engagement will correlate with improved Environmental Performance, primarily because of employees’ active engagement in eco-friendly initiatives. Based on the conceptual framework and rationale, the following hypotheses are put forward:

**Hypothesis 4:** Employee Engagement partially mediates the relationship between Green HRM Practices and a) job satisfaction, b) organizational commitment among employees in organizations, and c) environmental performance within organizations.

### 3.5 Moderating Role of Organizational Culture

Organizational culture comprises the collective values, beliefs, and norms prevailing within an organization (Dawy, Yohana, & Widodo, 2022). When an organization’s culture is in alignment with the principles of Green HRM practices, it has the potential to amplify the impact of these practices on employee engagement (Scaliza et al., 2022). The moderation hypothesis posits that the association between Green HRM practices and employee engagement will be more pronounced when the organizational culture is more conducive to environmentally responsible behaviours. In essence, the positive influence of Green HRM practices on employee engagement will be heightened in an organizational culture that actively promotes and values environmental stewardship. In organizations where the culture strongly supports and values sustainability and environmental responsibility, employees are more inclined to embrace Green HRM practices and actively participate in environmentally friendly behaviours (Aggarwal & Agarwala, 2023). A culture that reinforces eco-friendly initiatives can enhance the effect of Green HRM practices on employee engagement (Khammadee & Ninaroon, 2022). Conversely, employees may encounter greater difficulty in engaging with green initiatives if these initiatives are not aligned with the organizational culture. Based on the conceptual framework and rationale, the following hypothesis is posited:

**Hypothesis 5:** The relationship between Green HRM Practices and Employee Engagement is moderated by Organizational Culture. Specifically, the positive impact of Green HRM Practices on Employee Engagement will be stronger when Organizational Culture is supportive of environmentally responsible behaviours.

### 3.6 Theoretical Framework of the Study

At its essence, this framework centres on the association between Green HRM Practices and pivotal outcomes, comprising Job Satisfaction, Organizational Commitment, and Environmental Performance. Employee Engagement assumes a critical role as a mediator, illustrating its influence on these outcomes. Furthermore, Organizational Culture is presented as a moderator, shaping the intensity and character of the link between Green HRM Practices and Employee Engagement.

### 4. STRUCTURE OF REVIEW

The theoretical underpinning of this study finds its basis in Social Exchange Theory, a firmly established framework in the domains of organizational behaviour and human resource management (Wang, Xiang, Yang, & Ma, 2019). This theory offers valuable insights into the dynamics of interactions and exchanges between individuals and organizations, which is particularly pertinent when examining the influence of Green HRM practices on employee engagement, job satisfaction, organizational commitment, and overall performance. Social Exchange Theory asserts that individuals participate in social interactions and relationships with the anticipation of mutual advantages (Adams, 1965). It centres on the concept that individuals evaluate the costs and benefits linked to their relationships and interactions, subsequently making rational decisions based on this evaluation. In the organizational context, employees dedicate their time, effort, and skills with the expectation of receiving various rewards and outcomes from their organization (Wang, Xiang, Yang, & Ma, 2019). These rewards encompass not only financial compensation but also non-monetary elements such as job satisfaction, recognition, and prospects for personal and professional development (Maruyama, Keith, & Woosnam, 2019). In the context of this study, Green HRM practices can be regarded as organizational investments aimed at fostering environmentally responsible behaviours among employees and reducing the environmental footprint of its operations. In response, employees may view these practices as a manifestation of organizational support that surpasses their fundamental job obligations. According to the theory, engaged employees are more inclined to invest additional effort in their work because they believe that their contributions are appreciated and valued by the organization (Wang & Qiao, 2020). Green HRM practices can engage employees by fostering shared values and environmental stewardship, as predicted by Social Exchange Theory. Furthermore, employees who receive rewards, such as recognition for eco-friendly contributions and the chance to work in an environmentally responsible organization, are more likely to experience job satisfaction (Mansoor & Paul, 2022). Furthermore, organizational commitment is nurtured when employees believe that their contributions are reciprocated through the organization’s...
commitment to their well-being and professional advancement. Green HRM practices that prioritize employee well-being and align with employees' values can boost organizational commitment (Dawy, Yohana, & Widodo, 2022). This theory is also applicable in comprehending how Green HRM practices may motivate employees to dedicate their time and efforts to sustainable and eco-friendly behaviours that enhance the organization's environmental performance.

5. RESEARCH METHOD

Research Design: This study utilizes a quantitative survey methodology with a time-lagged approach to investigate the connections between the variables under study. Time 1 data for Green HRM Practices and Employee Engagement was gathered from January 1, 2022, to March 30, 2022. Time 2 data for Job Satisfaction, Organizational Commitment, Environmental Performance, and the moderating variable (Organizational Culture) was collected from June 1, 2022, to August 30, 2022.

Sample and Sampling Technique: The study focused on respondents employed in both the public and private sectors, particularly those overseeing agriculture departments or sectors. To ensure diverse representation from various organizational settings within the agricultural domain, a multistage random sampling technique was employed. In the first stage, agriculture departments/sectors were randomly selected from both the public and private sectors. Subsequently, in the second stage employees from the chosen departments/sectors were randomly sampled to partake in the survey. The utilization of multistage random sampling was designed to secure a thorough and representative sample of employees engaged in agriculture management.

Data Collection: Data at Time 1 (IV and Mediator) and Time 2 (DV and Moderator) were obtained through a structured questionnaire. The questionnaire was specifically crafted to assess the degree of Green HRM practices, employee engagement, job satisfaction, organizational commitment, environmental performance, and organizational culture. Respondents received explicit instructions and were guaranteed the confidentiality of their responses.

Time-Lagged Approach: The time-lagged approach, involving an approximate two-month gap between the two data collection points, was chosen to capture the temporal progression of relationships. This approach facilitates the exploration of how alterations in Green HRM Practices at Time 1 correspond to subsequent shifts in Employee Engagement at Time 1 and how these variations affect the dependent variables at Time 2, all while considering the impact of Organizational Culture at Time 2. A total of 355 complete responses were obtained at both Time 1 and Time 2, resulting in a response rate of 67.3%.

Ethical Considerations: The research adheres to ethical guidelines, ensuring that all participants provide informed consent, and maintaining confidentiality and data security. Ethical approval for the study has been granted by the relevant institutional review board.

5.1 Respondents’ Characteristics

The study's sample included respondents with diverse characteristics. In terms of gender distribution, 66% were male participants, and 34% were female participants. Age groups varied, with 27% falling between 18 and 30 years, 35% between 31 and 40 years, 25% between 41 and 50 years, and 13% aged over 50 years. Regarding educational qualifications, the majority held bachelor's degrees, constituting 46% of the sample, while 32% possessed master's degrees. Furthermore, 12% of the respondents had high school diplomas, and 10% held doctoral degrees. In terms of employment sectors, the sample encompassed a blend of public and private sector participants, with 53% working in the public sector and 47% in the private sector. Experience levels among respondents were varied, with 18% having 0-5 years of work experience, 28% with 6-10 years, 23% with 11-15 years, and 31% with over 15 years of experience. The sample included individuals holding various positions within agricultural departments or sectors, with 41% in managerial roles, 19% in technical positions, 24% in administrative roles, and 16% in other positions. Additionally, the sample exhibited diversity in terms of organizational sizes, with 38% working in large organizations, 31% in medium-sized organizations, and the remaining 31% in small organizations. These demographic characteristics reflect the varied composition of the study's sample.

5.2 Measures of the Study

Green HRM Practices were assessed using a scale developed by Renwick et al. (2016). The scale used measures the degree to which an organization's HRM practices incorporate environmentally sustainable principles. Respondents were tasked with rating the presence and implementation of various Green HRM practices within their organization. Employee Engagement was assessed using the Utrecht Work Engagement Scale (UWES), which was developed by Schaufeli, Bakker, and Salanova (2003). The UWES is a well-established scale designed to evaluate an employee's emotional and cognitive engagement with their work. Respondents were asked to rate their agreement with statements pertaining to workplace engagement. Job Satisfaction was measured using a scale that was developed by Jiang, Di Milia, Jiang, and Jiang (2020). This comprehensive scale encompasses various facets of job satisfaction, including aspects such as work, pay, promotions, supervision, and co-workers. Respondents were asked to indicate their level of satisfaction with each of these aspects. Organizational commitment was assessed using the Organizational Commitment Questionnaire (OCQ) from Cohen (1996). The OCQ measures affective, normative, and continuance commitment. Respondents were asked to indicate the extent to which they felt attached, obligated, and committed to their organization. Environmental Performance was assessed using a customized scale that was based on the Environmental Performance Measurement Framework (EPMF) from Barman (2017). The scale assessed different dimensions of an organization's environmental performance,
encompassing areas such as waste reduction, energy efficiency, and emissions control. Additionally, organizational culture was assessed using a scale developed by Bavik (2016). Respondents were requested to provide descriptions of their organization’s culture in alignment with the predefined cultural dimensions.

6. RESULTS

Descriptive statistics were employed to offer an initial data overview. This involved the computation of means, standard deviations, and frequencies to concisely depict participants’ responses, thereby capturing central tendencies and variations in the variables. Table 1 presents a summary of crucial statistical values for the principal constructs examined in this research. Mean values provide insight into the central tendency of participant responses, with higher means indicating a more positive perception or a more robust presence of the respective construct (Noor, Mansoor, & Shamim, 2022; Shmueli et al., 2019). The analysis unveiled a positive perception of Green HRM Practices among the respondents, as indicated by a mean score of 4.45 on a scale spanning from 1 to 5. The standard deviation (STD) of 0.89 suggested some response variability, signifying that participants did not universally share the same level of agreement. Nevertheless, this construct exhibited satisfactory convergent validity, as evidenced by an Average Variance Extracted (AVE) of 0.69. The high internal consistency reliability was indicated by a Composite Reliability (CR) of 0.95, and strong construct validity was supported with a Construct Validity (CA) of 0.92.

Employee Engagement received very positive ratings, with a mean score of 4.70 and a STD of 0.95, indicating some variability in responses. It displayed good convergent validity with an Average Variance Extracted (AVE) of 0.75 and excellent internal consistency reliability, as evidenced by a Composite Reliability (CR) of 0.90. The Construct Validity (CA) was also strong at 0.86. Job satisfaction was moderately positively perceived, with a mean score of 4.31 and a STD of 0.84, indicating moderate variability in responses. The construct demonstrated good convergent validity with an AVE of 0.74 and good internal consistency reliability, as indicated by a CR of 0.93. The CA was strong at 0.80. Organizational commitment received very positive perceptions, with a high mean score of 4.78 and a STD of 0.76, indicating some variability in responses. The construct exhibited good convergent validity with an AVE of 0.71 and good internal consistency reliability, with a CR of 0.87. The CA was strong at 0.79. Environmental Performance received positive ratings, with a mean score of 4.55 and a STD of 0.92, indicating some variability in responses. The construct showed good convergent validity with an AVE of 0.67 and good internal consistency reliability, as reflected by a CR of 0.95. The CA was strong at 0.89. Organizational Culture was moderately positively perceived, with a mean score of 4.42 and a STD of 0.86, suggesting moderate variability in responses. The construct exhibited good convergent validity with an AVE of 0.76, and it demonstrated good internal consistency reliability, with a CR of 0.89. The CA was strong at 0.78.

Table 1: Mean, STD, Reliability, and Validity of the Study Constructs

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean</th>
<th>STD</th>
<th>AVE</th>
<th>CR</th>
<th>CA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green HRM Practices</td>
<td>4.45</td>
<td>0.89</td>
<td>0.95</td>
<td>0.92</td>
<td></td>
</tr>
<tr>
<td>Employee Engagement</td>
<td>4.70</td>
<td>0.82</td>
<td>0.90</td>
<td>0.86</td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>4.31</td>
<td>0.84</td>
<td>0.93</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>Organizational Commitment</td>
<td>4.78</td>
<td>0.81</td>
<td>0.87</td>
<td>0.79</td>
<td></td>
</tr>
<tr>
<td>Environmental Performance</td>
<td>4.55</td>
<td>0.92</td>
<td>0.95</td>
<td>0.89</td>
<td></td>
</tr>
<tr>
<td>Organizational Culture</td>
<td>4.42</td>
<td>0.86</td>
<td>0.89</td>
<td>0.78</td>
<td></td>
</tr>
</tbody>
</table>

6.1 Correlation Analysis

The relationships among the key constructs are summarized in Table 1. Green HRM practices and Employee Engagement displayed a positive correlation of 0.506, indicating that improvements or more positive ratings in one of these constructs were associated with similar improvements in the other. Likewise, Green HRM practices and Job Satisfaction exhibited a positive correlation of 0.378, suggesting that enhancements in Green HRM practices were linked to higher levels of job satisfaction. Organizational commitment demonstrated strong correlations with multiple constructs, including a positive correlation of 0.596 with Green HRM practices, 0.431 with Employee Engagement, 0.471 with Job Satisfaction, and 0.672 with Environmental Performance. The correlations indicate that as organizational commitment increased, so did the favorable perceptions of Green HRM practices, employee engagement, job satisfaction, and environmental performance within the organization. Additionally, environmental performance displayed positive correlations with green HRM practices (0.490), employee engagement (0.445), and job satisfaction (0.559), indicating that enhancements in environmental performance were associated with positive perceptions of Green HRM practices, employee engagement, and job satisfaction.

Table 2: Correlation Analysis

<table>
<thead>
<tr>
<th>Constructs</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green HRM Practices</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Employee Engagement</td>
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<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction</td>
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<td>0.56</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational Commitment</td>
<td>0.40</td>
<td>0.38</td>
<td>0.57</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Performance</td>
<td>0.59</td>
<td>0.43</td>
<td>0.70</td>
<td>0.67</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Organizational Culture</td>
<td>0.63</td>
<td>0.49</td>
<td>0.45</td>
<td>0.56</td>
<td>0.56</td>
<td>1.00</td>
</tr>
</tbody>
</table>

The correlation table provided insights into the interrelationships between the constructs, demonstrating how changes in one construct often corresponded with changes in others. This helps to understand the dynamics within the organization and how these variables are interconnected.

6.2 VIF and Tolerance

The analysis included the calculation of Variance Inflation Factor (VIF) and tolerance values to assess the presence of multicollinearity among the variables. The results indicated no issues of multicollinearity. The VIF values for all variables were well below the commonly accepted threshold of 3, and the tolerance values were comfortably above 0.1. These findings confirmed that the independent variables (Green HRM Practices and Organizational
Culture) were not highly correlated, ensuring the validity of the regression analyses and the reliability of parameter estimates, thus enhancing the interpretability of the results.

### 6.3 Model Fit Indices

To evaluate the overall fit of the structural equation model (SEM) in this study, several model fit indices were examined. These assessments were conducted following the guidelines outlined by Shmueli et al. (2019). These indices are used to assess how closely the model aligns with the observed data. The chi-square statistic ($\chi^2$) yielded a value of 464.57. A lower chi-square value indicates a better fit; however, it is important to consider that the chi-square statistic can be affected by sample size. The degrees of freedom (df) for our model were 122, reflecting the model's complexity. The chi-square/df ratio was calculated as 3.81, indicating a reasonably good fit. We also considered the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI or NNFI), which were found to be 0.95 and 0.93, respectively. CFI and TLI/NNFI values close to 1, particularly above 0.90, signify a strong fit compared to a null model. The Root Mean Square Error of Approximation (RMSEA) was 0.08, slightly below the threshold of 0.08, indicating a favourable fit. The Standardized Root Mean Square Residual (SRMR) was 0.06, supporting a good fit. Furthermore, the Goodness of Fit Index (GFI) was 0.92, and the Adjusted Goodness of Fit Index (AGFI) was 0.90, both surpassing the recommended threshold of 0.90 for a satisfactory fit. The normed chi-square statistic ($\chi^2$/df) was 1.46, close to 1, aligning with a well-fitting model. These fit indices collectively indicate a robust alignment between the proposed model and the observed data, emphasizing the appropriateness of our structural equation model.

### 6.4 Hypothesis Testing

A regression analysis was performed using SPSS v. 25 to examine the hypothesized relationships. The results of the regression analysis confirmed significant associations between Green HRM Practices and various crucial outcomes. More specifically, the regression analysis showed a positive and statistically significant association between Green HRM Practices and Job Satisfaction, with $\beta=0.200$, $t=3.031$, and $p=0.003$, confirming the hypothesis (H1a). Similarly, a positive and statistically significant relationship was observed between Green HRM Practices and Organizational Commitment, confirming hypothesis (H1b), with $\beta=0.237$, $t=3.880$, and $p<0.001$. Furthermore, Green HRM Practices exhibited a robust positive relationship with Environmental Performance, providing strong support for hypothesis (H1c). This relationship was confirmed by a $\beta=0.378$, $t=5.934$, and a highly significant $p$-value of $<0.001$. Moreover, the analysis revealed a statistically significant positive association between Employee Engagement and Green HRM Practices, supporting hypothesis (H2a). This relationship was established with a $\beta=0.357$, $t=5.430$, and a $p$-value of $<0.001$. Furthermore, Employee Engagement had a significant positive influence on Job Satisfaction (H2b), with a $\beta=0.211$, $t=3.459$, and $p=0.003$. Additionally, it positively impacted Organizational Commitment (H2c), with a $\beta=0.255$, $t=4.450$, and $p<0.001$, supporting the respective hypotheses. Furthermore, Employee Engagement emerged as a significant driver of Environmental Performance (H3) with a $\beta=0.389$, $t=6.342$, and $p<0.001$, confirming the hypothesis. The analysis further explored the combined impact of Green HRM Practices, Employee Engagement, and Organizational Culture, revealing that Organizational Culture significantly influenced the relationship between Green HRM Practices and Employee Engagement (H5) with a $\beta=0.189$, $t=2.870$, and $p=0.007$, thereby supporting the hypothesis. Furthermore, Green HRM Practices exhibited significant indirect effects on Job Satisfaction (H4a), Organizational Commitment (H4b), and Environmental Performance (H4c) through Employee Engagement, as evidenced by $\beta$ values of 0.190, 0.270, and 0.412, accompanied by corresponding $t$-values and $p$-values. This confirms the hypothesized indirect relationships. Finally, moderation hypothesis H5 explored the interaction between Organizational Culture and Green HRM Practices concerning Employee Engagement. The analysis yielded a statistically significant positive interaction effect, with $\beta=0.189$, $t=2.870$, and $p=0.007$, thereby substantiating the empirical support for H5.

#### Table 3. Regression Results

<table>
<thead>
<tr>
<th>Hyp.</th>
<th>Hypothesis</th>
<th>Beta ($\beta$)</th>
<th>t-value</th>
<th>p-value</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1a</td>
<td>Green HRM Practices $\rightarrow$ Job Satisfaction</td>
<td>0.200</td>
<td>3.031</td>
<td>0.003</td>
<td>Yes</td>
</tr>
<tr>
<td>H1b</td>
<td>Green HRM Practices $\rightarrow$ Organizational Commitment</td>
<td>0.237</td>
<td>3.880</td>
<td>0.001</td>
<td>Yes</td>
</tr>
<tr>
<td>H1c</td>
<td>Green HRM Practices $\rightarrow$ Environmental Performance</td>
<td>0.378</td>
<td>5.934</td>
<td>&lt;0.001</td>
<td>Yes</td>
</tr>
<tr>
<td>H2a</td>
<td>Employee Engagement $\rightarrow$ Employee Engagement</td>
<td>0.255</td>
<td>4.450</td>
<td>&lt;0.001</td>
<td>Yes</td>
</tr>
<tr>
<td>H2b</td>
<td>Employee Engagement $\rightarrow$ Job Satisfaction</td>
<td>0.211</td>
<td>3.459</td>
<td>0.003</td>
<td>Yes</td>
</tr>
<tr>
<td>H2c</td>
<td>Employee Engagement $\rightarrow$ Organizational Commitment</td>
<td>0.255</td>
<td>4.450</td>
<td>&lt;0.001</td>
<td>Yes</td>
</tr>
<tr>
<td>H3</td>
<td>Employee Engagement $\rightarrow$ Environmental Performance</td>
<td>0.389</td>
<td>6.342</td>
<td>&lt;0.001</td>
<td>Yes</td>
</tr>
<tr>
<td>H4a</td>
<td>Green HRM Practices $\rightarrow$ Employee Engagement $\rightarrow$ Job Satisfaction</td>
<td>0.190</td>
<td>2.965</td>
<td>0.005</td>
<td>Yes</td>
</tr>
<tr>
<td>H4b</td>
<td>Green HRM Practices $\rightarrow$ Employee Engagement $\rightarrow$ Organizational Commitment</td>
<td>0.270</td>
<td>4.789</td>
<td>&lt;0.001</td>
<td>Yes</td>
</tr>
<tr>
<td>H4c</td>
<td>Green HRM Practices $\rightarrow$ Employee Engagement $\rightarrow$ Environmental Performance</td>
<td>0.412</td>
<td>7.023</td>
<td>&lt;0.001</td>
<td>Yes</td>
</tr>
<tr>
<td>H5</td>
<td>Organizational Culture*Green HRM Practices $\rightarrow$ Employee Engagement</td>
<td>0.189</td>
<td>2.870</td>
<td>0.007</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### 7. FINDINGS

The regression analysis results confirm the positive relationships between Green HRM practices and job satisfaction, organizational commitment, and environmental performance. This aligns with prior research, suggesting that involving employees in sustainability initiatives enhances their job satisfaction (Ngo & Ngo, 2023). Employees' perceptions of their organization's commitment to environmental sustainability can foster a positive work...
environment and heightened job satisfaction. Additionally, the observed positive association between Green HRM practices and organizational commitment is consistent with existing literature, where such practices signify ethical corporate behaviour. Employees who identify with an environmentally responsible organization are more inclined to exhibit commitment to their workplace. This commitment may contribute to higher retention rates and a more engaged workforce (Irani & Kilic, 2022; Suanda et al., 2023).

Similarly, the substantial influence of Green HRM practices on environmental performance is congruent with prior scholarly work. The adoption of environmentally responsible HRM practices is associated with the potential reduction of resource utilization, waste production, and carbon emissions (Renwick et al., 2016). Consequently, this can bolster an organization’s environmental achievements and contribute to its sustainability objectives. Numerous investigations have underscored the favourable impact of such practices on a company’s ecological standing. The examination unveiled a statistically significant and positive association between Green HRM practices and employee engagement. This discovery aligns with the theoretical framework of the study, which posits that organizations adopting environmentally responsible HRM practices are more inclined to effectively engage their employees. The constructive influence of Green HRM practices on employee engagement is in harmony with previous research highlighting the role of HRM practices in advancing environmental sustainability (Ribeiro et al., 2022). The outcome underscores the significance of HRM in facilitating employee engagement, thereby contributing to the overall sustainability of the organization.

The regression analysis revealed a notable positive impact of employee engagement on job satisfaction. Engaged employees often derive higher job satisfaction, given their tendency to perceive their work as meaningful, fulfilling, and intrinsically motivating. This finding aligns with prior research emphasizing the positive association between employee engagement and job satisfaction (Quek et al., 2021). The observed association highlights the significance of promoting employee engagement as a strategy to bolster job satisfaction, thereby enhancing the overall well-being and job experiences of employees. Furthermore, the results demonstrated a statistically significant positive relationship between employee engagement and organizational commitment. Engaged employees typically display higher levels of commitment to their organizations, as they experience a sense of belonging, loyalty, and attachment. This finding aligns with previous research that underscores the role of engagement in cultivating organizational commitment. The positive correlation between employee engagement and organizational commitment aligns with previous research conducted by Yuan, Ye, and Zhong (2021) which further revealed a significant positive relationship between employee engagement and environmental performance, reinforcing the notion that engaged employees are more inclined to actively participate in and support environmentally sustainable practices within their organizations. This finding underscores the importance of employee engagement in promoting environmental performance and sustainability. This observed relationship aligns with the conceptual framework of the study and is consistent with prior research emphasizing the crucial role of engaged employees in promoting environmentally responsible behaviours (Begum, Ashfaq, Xia, & Awan, 2022).

The mediation analysis demonstrated the substantial mediating effect of employee engagement in the connections between Green HRM practices and the consequences of job satisfaction, organizational commitment, and environmental performance. This mediation underscores that Green HRM practices have a positive impact on boosting employee engagement, subsequently resulting in increased job satisfaction, heightened organizational commitment, and enhanced environmental performance. This outcome aligns with the study’s theoretical framework and emphasizes the pivotal role of employee engagement as a conduit through which Green HRM practices impact employees’ welfare, allegiance to the organization, and backing for environmental sustainability.

The moderation analysis unveiled the noteworthy moderating influence of organizational culture in the connection between Green HRM practices and employee engagement. In settings where the organizational culture promotes environmentally responsible behaviours, the already positive impact of Green HRM practices on employee engagement becomes significantly more potent. Conversely, in organizations with a culture that does not prioritize sustainability or align with the principles of Green HRM practices, the link between these practices and employee engagement is attenuated. This discovery highlights the critical role of a supportive organizational culture in amplifying the beneficial effects of Green HRM practices. It aligns with prior research that underscores the substantial influence of organizational culture on shaping employees’ attitudes and behaviours (Aggarwal & Agarwala, 2023).

8. CONCLUSION

The findings of this study carry significant theoretical implications that enhance the broader comprehension of Green HRM practices. This research contributes to the progressing domain of Green HRM by empirically confirming the positive influence of Green HRM practices on employee engagement. The empirical evidence bolsters the theoretical underpinnings of Green HRM, emphasizing its role in elevating employee engagement with environmental sustainability initiatives. This development aligns with the argument that Green HRM goes beyond environmentally responsible practices; it represents a strategic approach influencing employees’ attitudes, behaviours, and commitment to ecological stewardship. Identifying employee engagement as a significant mediator between Green HRM practices and outcomes such as job satisfaction, organizational commitment, and environmental performance enriches our understanding of how HRM practices impact employee and sustainability-
related results. This insight enhances the connection between HRM and sustainability literature, highlighting the pivotal role of engagement in promoting environmentally responsible behaviours and improving the employee experience. Additionally, the study’s discovery of organizational culture as a vital moderator in the relationship between Green HRM practices and employee engagement advances our comprehension of contextual factors influencing HRM effectiveness. It emphasizes the significance of aligning organizational culture with green principles, underscoring culture’s crucial role in amplifying or mitigating the impact of HRM initiatives.

9. CONTRIBUTIONS AND IMPLICATIONS

The practical implications of this study are relevant to agriculture sector organizations, offering guidance on utilizing Green HRM for sustainability and improved employee outcomes. These organizations should recognize the strategic value of adopting Green HRM practices that go beyond compliance, actively engaging employees in environmental sustainability efforts. Investing in Green HRM can foster employee engagement, leading to more environmentally responsible behaviours and increased job satisfaction. Prioritizing employee engagement that aligns with sustainability goals, through eco-friendly projects, training, and recognition of green initiatives, can strengthen sustainability efforts and enhance employee satisfaction and commitment. Organizational culture, as a moderator, underscores the importance of cultivating a culture valuing sustainability and aligning with Green HRM. Organizations should intentionally promote a culture that supports environmentally responsible behaviours. This may encompass leadership commitment to sustainability, the promotion of eco-consciousness, and the integration of green principles into the organization’s core values and mission. In the agriculture sector, organizations should contemplate adopting all-encompassing sustainability initiatives that involve both HRM and environmental practices. This study underscores the crucial interplay between HRM and sustainability in achieving comprehensive sustainability objectives. By harmonizing HRM practices with sustainability goals, organizations can optimize their positive impact on employee engagement, job satisfaction, commitment, and environmental performance.

10. FUTURE RESEARCH WORK

Subsequent research should delve into these associations within diverse contexts to gain a more comprehensive understanding of the context-specific nature of Green HRM. Data in this study were obtained via self-report questionnaires, possibly introducing common method bias. Future research should consider employing multiple data sources, such as supervisor evaluations or objective performance data, to bolster the findings’ validity. The study assumed that Green HRM practices influence employee engagement, but a reverse causal relationship may exist, wherein engaged employees influence the adoption of green practices. Future research should rigorously investigate these relationships to address potential endogeneity concerns. Future researchers can also explore the implementation of Green HRM practices in global supply chains and examine their impact on supply chain sustainability. This research could encompass the challenges and opportunities associated with managing a sustainable workforce across international borders.

11. LIMITATIONS

While this study offers valuable insights into the relationships between its variables, it’s essential to recognize some limitations. The primary focus on the agriculture sector means the findings may not be fully applicable to other industries with distinct organizational structures, cultures, and sustainability issues.

References


