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The Influence of Sustainable Human Resource Management, Workplace Well-Being, and Sustainable Work Environment on Job Satisfaction: the Mediating Role of Employee Engagement

Formaida Tambunan¹, Fransisca Tiurmaida Damanik², Dedy Lazuardi³, Destiany Sijabat⁴

¹²⁴Universitas Sari Mutiara Indonesia, North Sumatra, Indonesia, ³Sekolah Tinggi Ilmu Ekonomi Eka Prasetya, Nort Sumatra, Indonesia

Correspondence: tambunanformaida@gmail.com¹

Abstract

Sustainable Human Resource Management (Sustainable HRM) has become a strategic approach to enhancing organizational sustainability and employee well-being. However, empirical evidence on how Sustainable HRM, workplace well-being, and a sustainable work environment jointly influence job satisfaction through employee engagement remains limited, particularly in Indonesia's manufacturing sector. This study examines the effects of Sustainable HRM, workplace well-being, and a sustainable work environment on employee engagement, the effect of employee engagement on job satisfaction, and the indirect effects of these organizational factors on job satisfaction through employee engagement. A quantitative research design was employed using a census of 396 employees at PT. Musim Mas Group Medan. Data were collected through a structured questionnaire and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings indicate that Sustainable HRM ($\beta = 0.42$), workplace well-being ($\beta = 0.31$), and a sustainable work environment ($\beta = 0.28$) positively and significantly affect employee engagement, while employee engagement positively and significantly affects job satisfaction ($\beta = 0.53$). Significant indirect effects through employee engagement were also observed for Sustainable HRM, workplace well-being, and sustainable work environment in relation to job satisfaction. This study contributes to the Sustainable HRM literature by integrating economic, social, and environmental dimensions into a single structural framework within the Indonesian manufacturing context and offers practical implications for organizations seeking to strengthen employee engagement and achieve long-term organizational sustainability.

KEYWORDS

sustainable human resource management; workplace well-being; sustainable work environment; employee engagement; job satisfaction; PLS-SEM.

Introduction

Sustainability has become a strategic priority for organizations worldwide due to increasing environmental challenges, stakeholder expectations, and global commitments to sustainable development. Organizations are no longer evaluated solely based on financial performance but also on their ability to balance economic growth, social responsibility, and environmental stewardship. Consequently, sustainability principles have increasingly been integrated into organizational strategies, including human resource management, giving rise to Sustainable Human Resource Management (Sustainable HRM)

(Poon & Law, 2022; Ren et al., 2023; Westerman et al., 2020). Sustainable HRM extends traditional human resource management by integrating sustainability principles into recruitment, training, performance management, employee development, and compensation systems to support long-term organizational performance while simultaneously enhancing employee well-being (Diaz-Carrion et al., 2020; Podgorodnichenko et al., 2021; Renwick et al., 2013; Ribeiro et al., 2022; Tang et al., 2018).

Recent studies consistently demonstrate that Sustainable HRM contributes to both organizational and employee outcomes. Previous research has reported positive relationships between Sustainable HRM and employee engagement, organizational commitment, organizational performance, environmental performance, and job satisfaction (Abu-Mahfouz et al., 2023; Agnieszka Wojtczuk-Turek et al., 2024; Cahyadi et al., 2025; Qamar et al., 2024a). Similarly, workplace well-being has been recognized as an important psychological resource that improves employees' motivation, commitment, and work attitudes, whereas a sustainable work environment provides physical and psychological conditions that encourage employees to perform effectively while supporting environmental sustainability (Kosec et al., 2022; Yang et al., 2024). Collectively, these studies suggest that sustainable human resource practices create positive organizational climates that foster higher employee engagement and job satisfaction (Ababneh, 2021; Cachón-Rodríguez et al., 2021; Cahyadi et al., 2025; Chen et al., 2021; Cho & Choi, 2021; Lulewicz-Sas et al., 2022; Sypniewska et al., 2023).

Despite these advances, several important research gaps remain. First, previous studies have generally examined Sustainable HRM, workplace well-being, or sustainable work environment independently, while limited empirical evidence has investigated the combined influence of these three organizational factors on job satisfaction within a single integrated structural model. Second, although employee engagement has frequently been examined as an organizational outcome, relatively few studies have investigated its mediating role in explaining how Sustainable HRM, workplace well-being, and sustainable work environment simultaneously influence job satisfaction. Third, most empirical evidence has been generated from developed countries, whereas research conducted in developing economies, particularly within Indonesia's manufacturing industry, remains relatively limited. Consequently, the mechanisms through which sustainable human resource practices improve employee job satisfaction in this context remain insufficiently understood (Podgorodnichenko et al., 2021).

The Indonesian manufacturing sector provides an important context for extending Sustainable HRM theory because manufacturing companies simultaneously face increasing competitive pressures, environmental regulations, and workforce sustainability challenges. As one of Indonesia's leading agro-industrial manufacturing companies, PT. Musim Mas Group Medan has increasingly incorporated sustainability principles into its organizational practices while maintaining operational competitiveness. The implementation of Sustainable HRM in such a labor-intensive manufacturing environment provides an appropriate empirical setting for examining whether sustainable organizational practices can strengthen employee engagement and improve job satisfaction. Therefore, investigating this relationship contributes not only to organizational practice but also to the broader understanding of Sustainable HRM in emerging economies (Parida et al., 2021).

The novelty of this study lies in its integrated examination of Sustainable Human Resource Management, workplace

well-being, and sustainable work environment in relation to job satisfaction through the mediating role of employee engagement within the Indonesian manufacturing sector. Unlike previous studies that primarily focused on individual relationships among these variables, this study integrates the economic, social, and environmental dimensions of sustainability into a single structural framework. Furthermore, this study extends the Sustainable HRM literature by providing empirical evidence from PT. Musim Mas Group Medan, thereby enriching the limited body of research on Sustainable HRM in developing countries and offering practical insights for organizations seeking to improve employee well-being and achieve long-term organizational sustainability.

Based on these theoretical considerations and empirical gaps, this study aims to examine the effects of Sustainable Human Resource Management, workplace well-being, and sustainable work environment on employee engagement, the effect of employee engagement on job satisfaction, and the indirect effects of these organizational factors on job satisfaction through employee engagement.

Problem Identification and Significance

Although various previous studies (Falcó et al., 2025; Lu et al., 2023; Qamar et al., 2024b) have confirmed that Sustainable Human Resource Management (HRM) schemes have a positive impact on ecological outcomes and organizational performance, the mechanisms by which these policies influence employee psychological well-being—particularly in terms of job satisfaction and engagement—remain rarely explored, particularly in developing countries (Li et al., 2023; Moin et al., 2021; Ndengu & Leka, 2022).

Domestically, the trend of implementing sustainability initiatives is beginning to escalate in large manufacturing entities such as PT. Musim Mas Group Medan. However, field evidence clearly linking these practices to employee well-being indicators remains limited. This situation reflects a significant gap, both in terms of theory development and the relevance of the research context (Nusraningrum et al., 2024; Van et al., 2024).

Problem Formulation and Research Questions

Based on the research objectives and the proposed conceptual framework, the research questions are formulated as follows:

1. Does Sustainable Human Resource Management significantly affect employee engagement?
2. Does workplace well-being significantly affect employee engagement?
3. Does a sustainable work environment significantly affect employee engagement?
4. Does employee engagement significantly affect job satisfaction?
5. Does employee engagement mediate the effects of Sustainable Human Resource Management, workplace well-being, and sustainable work environment on job satisfaction?

Complexity of the Problem

The interconnection between human resource management policies and job satisfaction levels is inherently not unidirectional or simple. While the implementation of Sustainable HRM has the capacity to directly boost satisfaction, employee engagement—often defined as psychological involvement—plays a crucial mediating role in this relationship (Sivapragasam & Raya, 2018). Furthermore, the dimension of workplace well-being is a manifestation of the emotional dynamics and mental well-being of staff (İsgör & Haspolat, 2016). Meanwhile, the concept of a sustainable work ecosystem integrates physical safety standards, health insurance, and environmentally friendly principles into a

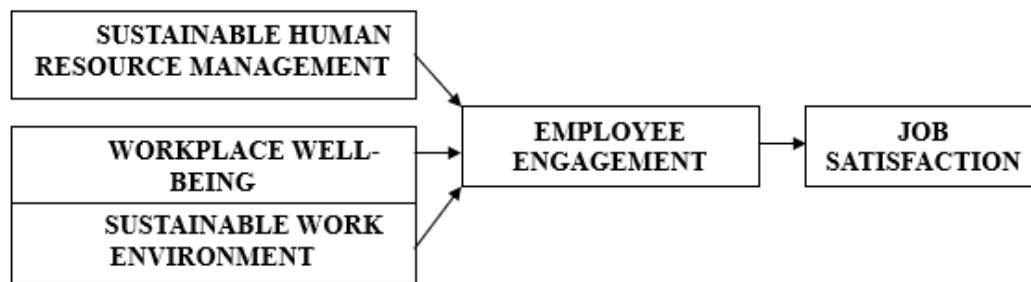


Figure 1. Conceptual Framework

unified, conducive work environment (Andrulli & Gerards, 2023; Ibrahim & Hussein, 2024; Ingram et al., 2023; Pathardikar et al., 2023).

Research purposes

This research was specifically designed to investigate the following objectives:

1. To examine the effects of Sustainable HRM, workplace well-being, and sustainable work environment on employee engagement.
2. To examine the effect of employee engagement on job satisfaction
3. To examine the indirect effects of Sustainable HRM, workplace well-being, and sustainable work environment on job satisfaction through employee engagement.

Theoretically, this study offers significance through further elaboration of the Sustainable HRM model based on the triple bottom line pillars within a synergistic structural construct. Furthermore, there is also methodological added value resulting from the implementation of the SEM-PLS analysis tool to validate the impact of intermediary variables in the large-scale processing industry in Indonesia. The representation of the thought process or conceptual framework proposed in this study is systematically summarized in the Figure below (see Figure 1).

Methods

Research Design

This study employed a quantitative research approach using a cross-sectional survey design to examine the relationships among Sustainable Human Resource Management (Sustainable HRM), Workplace Well-being, Sustainable Work Environment, Employee Engagement, and Job Satisfaction. A cross-sectional design was considered appropriate because data were collected from respondents at a single point in time to investigate the structural relationships among the proposed constructs. The research model was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) (Ringle et al., 2024), which is suitable for simultaneously estimating complex relationships involving multiple latent constructs and mediation effects.

Research Type

This study employed a quantitative research approach using a cross-sectional survey design. Data were collected at a single point in time to examine the structural relationships among Sustainable Human Resource Management, Workplace Well-being, Sustainable Work Environment, Employee Engagement, and Job Satisfaction. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the proposed structural relationships and indirect effects among the study variables.

Population, Sampling Technique, and Respondent Criteria

The population consisted of all permanent employees of PT. Musim Mas Group Medan who were actively employed

during the data collection period. The company employed approximately 396 permanent employees, all of whom constituted the target population. Since the population size was relatively manageable, this study adopted a census (total sampling) technique, whereby all employees who met the inclusion criteria were invited to participate. Consequently, 396 valid questionnaires were obtained and included in the final analysis.

To ensure respondents possessed sufficient organizational experience to evaluate the constructs investigated, the inclusion criteria were:

- permanent employees;
- minimum employment tenure of one year;
- actively working during the survey period;
- willing to participate voluntarily.

The respondents represented various demographic backgrounds, including gender, age, educational level, and length of employment, providing adequate representation of the organizational workforce.

Measurement Instrument

Primary data were collected using a structured self-administered questionnaire measured on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The measurement scales were adapted from previously validated studies to ensure content validity. The constructs were measured as follows (see Table 1).

The Sustainable HRM construct covered green recruitment, green training, sustainable performance management, employee participation, and green compensation. Workplace Well-being measured employees' psychological and emotional well-being at work. Sustainable Work Environment assessed environmentally friendly workplace practices and occupational safety. Employee Engagement evaluated vigor, dedication, and absorption, while Job Satisfaction reflected employees' overall satisfaction with their work and organization.

Questionnaire Adaptation and Pilot Testing

The questionnaire was originally developed in English based on previously validated instruments. Prior to data collection, the instrument was translated into Indonesian using a translation and back-translation procedure to ensure semantic equivalence.

A pilot study involving 30 employees outside the final research sample was conducted to evaluate clarity, readability, and reliability of the questionnaire. Minor wording revisions were made based on respondents' feedback before distributing the final questionnaire.

Data Collection Procedure

Data collection was conducted over approximately one month through direct distribution of printed questionnaires at PT. Musim Mas Group Medan. Before completing the questionnaire, respondents received an explanation regarding the objectives of the study, voluntary participation, confidentiality, and anonymity of their responses. Only completed questionnaires with no substantial missing data

Table 1. Measurement Instrument

Construct	Number of Items	Source
Sustainable HRM	8 items	(Yuan et al., 2024); (Lu et al., 2023)
Workplace Well-being	6 items	(Yang et al., 2024); (Gyensare et al., 2024)
Sustainable Work Environment	6 items	(Gyensare et al., 2024)
Employee Engagement	9 items	(Širca et al., 2024)
Job Satisfaction	6 items	(Yang et al., 2024)

were included in the final analysis.

Research Location

This research setting focuses on PT. Musim Mas Group, a leading agricultural product manufacturing entity operating in Medan, North Sumatra, Indonesia. This company was chosen as the study location based on its track record of integrating sustainability principles into its talent management policies, making it a highly relevant representative for examining the phenomenon under study.

Instrumentation or Tools

The primary data type process in the field was applied through the distribution of a structured questionnaire that integrated a five-point Likert scale (a score of 1 represents strongly disagree to a score of 5 indicates strongly agree).

All measuring instruments used in this study refer to standard instruments whose validity has been tested in previous research, including:

- Sustainable HRM was adapted from (Yuan et al., 2024) and (Lu et al., 2023).
- Workplace Well-being from (Yang et al., 2024) and (Gyensare et al., 2024)
- Sustainable Work Environment from (Gyensare et al., 2024)
- Employee Engagement from (Širca et al., 2024).
- Job Satisfaction from (Yang et al., 2024).

Evaluation of the level of validity and clarity of the research instrument was carried out by measuring several parameters, namely the outer loading value required to be above 0.70, as well as the Average Variance Extracted (AVE) with a threshold exceeding 0.50. In addition, testing the consistency of the internal measuring instrument is based on the acquisition of the Composite Reliability coefficient and Cronbach's Alpha, where both must show a number above 0.70 to be declared reliable.

Data Analysis

The collected data were analyzed using SmartPLS 4 following the two-stage Partial Least Squares Structural Equation Modeling (PLS-SEM) procedure. First, the measurement model was evaluated by assessing indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Indicator reliability was assessed using outer loadings, while internal consistency reliability was evaluated using Cronbach's Alpha and Composite Reliability, with values above 0.70 considered acceptable. Convergent validity was examined using the Average Variance Extracted (AVE), with values exceeding 0.50 indicating adequate convergent validity. Discriminant validity was assessed using the Heterotrait-Monotrait Ratio (HTMT), with values below 0.90 indicating satisfactory discriminant validity (Hair et al., 2018).

Subsequently, the structural model was evaluated by examining collinearity using the Variance Inflation Factor (VIF), the coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and the significance of the structural path coefficients. Hypothesis testing was

performed using the bootstrapping procedure with 5,000 resamples. Statistical significance was determined based on the t-statistics and p-values, with a significance level of 0.05. To minimize the possibility of Common Method Bias (CMB) resulting from self-reported data, Harman's single-factor test was conducted. The first factor explained less than 50% of the total variance, indicating that common method bias was unlikely to threaten the validity of the findings.

Ethical Considerations

Formal institutional ethical approval was not obtained for this study. The research involved a non-interventional, voluntary questionnaire survey of adult employees and did not involve clinical procedures or vulnerable populations. Participation was entirely voluntary. Before completing the questionnaire, all respondents were informed about the purpose of the study and provided informed consent. Respondents' identities remained anonymous, all information was treated confidentially, and the collected data were used exclusively for academic research purposes.

Result and Discussion

Measurement Model

The measurement model was evaluated by examining indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Indicator reliability was assessed using outer loading values, all of which exceeded the recommended threshold of 0.70, indicating that each measurement item adequately represented its corresponding latent construct. Internal consistency reliability was confirmed through both Cronbach's alpha and Composite Reliability (CR), with all constructs demonstrating values above 0.70. Convergent validity was established because the Average Variance Extracted (AVE) for every construct exceeded the minimum criterion of 0.50 (Table 2). Furthermore, discriminant validity was assessed using the Heterotrait-Monotrait Ratio (HTMT), and all HTMT values were below the recommended threshold of 0.90, indicating satisfactory discriminant validity among the study constructs.

The results demonstrate that all measurement indicators satisfied the recommended psychometric criteria, confirming that the measurement model was both reliable and valid for subsequent structural model evaluation.

Discriminant Validity

Discriminant validity was further examined using the Heterotrait-Monotrait Ratio (HTMT). All HTMT values were below the threshold of 0.90 (Table 3), indicating that each latent construct was empirically distinct from the others.

Discriminant validity was further assessed using the Heterotrait-Monotrait Ratio (HTMT). All HTMT values were below the recommended threshold of 0.90, indicating that each construct was empirically distinct from the other constructs. Therefore, discriminant validity was established for all latent variables included in the model.

Structural Model

The structural model was evaluated by examining the path coefficients (β), t-statistics, p-values, effect sizes (f^2), coefficients of determination (R^2), and predictive relevance (Q^2). The results indicate that Sustainable HRM positively and significantly influenced Employee Engagement ($\beta = 0.42$, $t = 7.85$, $p < 0.001$). Workplace Well-being also had a positive and significant effect on Employee Engagement ($\beta = 0.31$, $t = 6.12$, $p = 0.001$), as did Sustainable Work Environment ($\beta =$

Table 2. Measurement Model Assessment

Construct	Cronbach's Alpha	Composite Reliability	AVE
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Sustainable HRM	0.861	0.877	0.772
Workplace Well-being	0.890	0.893	0.774
Sustainable Work Environment	0.869	0.873	0.760
Employee Engagement	0.872	0.881	0.810
Job Satisfaction	0.867	0.892	0.614

Table 3. HTMT Results

Constructs	SHRM	WWB	SWE	EE	JS
Sustainable HRM (SHRM)					
Workplace Well-Being (WWB)	0.614				
Sustainable Work Environment (SWE)	0.774	0.674			
Employee Engagement (EE)	0.633	0.522	0.798		
Job Satisfaction (JS)	0.778	0.663	0.711	0.702	

Table 4. Structural Model Results

Path	β	t-value	p-value	f ²
Sustainable HRM → Employee Engagement	0.42	7.85	<0.001	0.02
Workplace Well-being → Employee Engagement	0.31	6.12	0.001	0.16
Sustainable Work Environment → Employee Engagement	0.28	5.44	0.002	0.36
Employee Engagement → Job Satisfaction	0.53	9.21	<0.001	0.35

Table 5. R² and Q²

Construct	R ²	Q ²
Employee Engagement	0.649	0.637
Job Satisfaction	0.686	0.551

0.28, $t = 5.44$, $p = 0.002$). Furthermore, Employee Engagement positively and significantly influenced Job Satisfaction ($\beta = 0.53$, $t = 9.21$, $p < 0.001$) (Table 4).

Coefficient of Determination

The coefficient of determination (R^2) indicated that Sustainable HRM, Workplace Well-being, and Sustainable Work Environment jointly explained 64.9% of the variance in Employee Engagement ($R^2 = 0.649$). In addition, Employee Engagement explained 68.6% of the variance in Job Satisfaction ($R^2 = 0.686$). According to (Hair et al., 2024), these values indicate moderate to substantial explanatory power (Table 5).

Mediation Analysis

The indirect effects were examined using the bootstrapping procedure with 5,000 resamples. The results

indicate that Employee Engagement significantly mediated the relationship between Sustainable HRM and Job Satisfaction ($\beta = 0.38$, $t = 5.99$, $p = 0.004$). Similarly, Employee Engagement significantly mediated the relationship between Workplace Well-being and Job Satisfaction ($\beta = 0.41$, $t = 6.23$, $p = 0.001$). Employee Engagement also significantly mediated the relationship between Sustainable Work Environment and Job Satisfaction ($\beta = 0.62$, $t = 6.14$, $p = 0.016$). Because the corresponding direct effects on Job Satisfaction were not retained in the available structural-model records, the mediation type was not classified as partial or full mediation (Table 6).

The findings demonstrate that Sustainable Human Resource Management (Sustainable HRM) has a positive and significant effect on employee engagement. This result indicates that employees are more likely to develop stronger psychological attachment, dedication, and enthusiasm toward their work when organizations consistently implement sustainable human resource practices. Sustainable HRM practices, such as fair recruitment, continuous employee development, performance management, and employee participation, create a supportive organizational climate that encourages employees to become more engaged in their work.

This finding supports the Sustainable HRM perspective proposed by (Renwick et al., 2013), which emphasizes that integrating economic, social, and environmental sustainability into human resource management enhances employees' long-term well-being and organizational commitment. Similarly, (Tang et al., 2018) argued that sustainable HRM practices strengthen employees' psychological attachment by fostering responsible organizational values and sustainable work behaviors. Therefore, employees who perceive that the organization is committed to sustainable and ethical HR practices are more likely to reciprocate through higher levels of engagement.

The present findings are also consistent with the empirical evidence reported by (Abu-Mahfouz et al., 2023) and (Cahyadi et al., 2025), who found that Sustainable HRM positively influences employee engagement and subsequently improves job satisfaction and organizational performance. In the context of PT. Musim Mas Group Medan, the implementation of Sustainable HRM appears to provide employees with a sense of organizational support, fairness, and career development opportunities, thereby strengthening their emotional attachment to the organization. These findings reinforce the argument that Sustainable HRM functions not only as an administrative human resource practice but also as a strategic mechanism for enhancing employee engagement and supporting long-term organizational sustainability.

Such management practices have proven effective in fostering loyalty, sparking internal motivation, building emotional affinity, and mitigating stress in professional environments. Individuals who feel recognized through inclusive and equitable regulations tend to demonstrate deeper dedication to the institution. Typically, highly engaged personnel display vibrant enthusiasm and total participation in all their responsibilities. This is confirmed by (Albrecht et al., 2021), who stated that deeply engaged employees possess substantial energy reserves, strong mental resilience, and a strong determination to deliver top performance in carrying out organizational tasks.

The manifestation of deep dedication is reflected in an individual's strong commitment to their profession, which then engenders a sense of pride and inspiration for the urgency of the tasks they undertake. Essentially, work is a crucial pillar of

Table 6. Indirect Effects

Relationship	β	t-value	p value
Sustainable HRM → Employee Engagement → Job Satisfaction	0.38	5.99	0.004

Workplace Well-being → Employee Engagement → Job Satisfaction	0.41	6.23	0.001
Sustainable Work Environment → Employee Engagement → Job Satisfaction	0.62	6.14	0.016

human existence, given that a person's lifestyle and social interactions are highly dependent on their professional activities. Therefore, every business entity has an interest in having human capital that feels prosperous and satisfied

This is based on the vital role of the private sector as a driving force for economic stability, not only providing excellent services but also opening up access to employment opportunities for the wider community. Comprehensively, field evidence confirms that Sustainable Human Resources (HRM) schemes have a significant positive impact on employee engagement by creating a healthy, ethical, and supportive work environment. Implementation of this policy has been proven to escalate internal drive (motivation), strengthen emotional bonds, and increase professional satisfaction, which in turn strengthens employee loyalty to the organization.

Workplace Well-being has been shown to be an important determinant of Employee Engagement. Employees who experience positive psychological, emotional, and social conditions at work are more likely to develop stronger emotional connections with their professional responsibilities (Dewi & Wardhani, 2023; Kosec et al., 2022; Zamralita & Wilis, 2023). Improvements in physical and psychological well-being may therefore strengthen employees' willingness to invest energy, dedication, and attention in their work. (Padmavathi, 2023; Roy et al., 2023).

Employee Engagement was also found to positively influence Job Satisfaction. This finding is consistent with previous studies indicating that employees who demonstrate higher levels of vigor, dedication, and psychological involvement in their work tend to report more favorable work attitudes and greater job satisfaction (Davidescu et al., 2020; Djafar et al., 2025; Sivapragasam & Raya, 2018; Supriyanto et al., 2021). These findings suggest that strengthening Employee Engagement may serve as an important organizational mechanism for improving employees' overall satisfaction with their work (Navajas-Romero et al., 2022).

Conclusion

This study examined the effects of Sustainable Human Resource Management (Sustainable HRM), Workplace Well-being, and Sustainable Work Environment on Employee Engagement, the effect of Employee Engagement on Job Satisfaction, and the indirect effects of these organizational factors on Job Satisfaction through Employee Engagement among employees of PT. Musim Mas Group Medan. The findings indicate that Sustainable HRM, Workplace Well-being, and Sustainable Work Environment each have a positive and significant effect on Employee Engagement. Furthermore, Employee Engagement has a positive and significant effect on Job Satisfaction. The mediation analysis revealed significant indirect effects of Sustainable HRM, Workplace Well-being, and

Sustainable Work Environment on Job Satisfaction through Employee Engagement. However, the mediation effects were not classified as partial or full because the corresponding direct effects could not be reverified.

This study provides empirical evidence supporting the Sustainable HRM literature by demonstrating that Employee Engagement is an important psychological mechanism through which sustainable human resource practices, employee well-being, and a supportive work environment are associated with Job Satisfaction. The findings also offer practical implications for organizations by emphasizing the importance of sustainable HR practices, employee well-being initiatives, and supportive work environments in strengthening Employee Engagement and promoting long-term organizational sustainability.

Despite these contributions, this study has several limitations. First, the cross-sectional research design limits the ability to establish causal relationships among the variables. Second, the study was conducted within a single organization, namely PT. Musim Mas Group Medan, which may limit the generalizability of the findings to other industries or organizational contexts. Third, all variables were measured using self-reported questionnaires, which may increase the possibility of common method bias. In addition, the unavailability of the original bootstrapping records limited the re-verification of certain structural-model statistics and prevented a definitive classification of the mediation effects.

Future research is encouraged to employ longitudinal or experimental research designs to better examine causal relationships among Sustainable HRM, Workplace Well-being, Sustainable Work Environment, Employee Engagement, and Job Satisfaction. Studies involving multiple organizations and different industrial sectors are also recommended to enhance the generalizability of the findings. In addition, future research may incorporate other mediating or moderating variables, such as organizational commitment, psychological empowerment, organizational trust, or leadership style, to provide a more comprehensive understanding of the mechanisms through which sustainable organizational practices influence employee attitudes and organizational outcomes.

Author contributions

Author Contributions: Formaida Tambunan was fully responsible for formulating the main research idea, designing the research methodology, conducting data collection, organizing and analyzing the data using SmartPLS, interpreting the findings, preparing the original manuscript, revising the manuscript, and serving as the corresponding author throughout the submission and revision process. Fransisca Tiurmaida Damanik contributed to the literature review as well as the review and editing of the manuscript. Dedy Lazuardi contributed to academic supervision, critical review of the manuscript, and validation of the research content. Destiany Sijabat contributed to manuscript proofreading, formatting, literature checking, and the final review of the manuscript.

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