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Bridging Artificial Intelligence and Sustainable Human Resource Management Performance in Government Agencies, Tanzania

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Abstract: *The purpose of this study was to examine how the mediating role of ethical considerations and the moderating role of green transformational leadership can be used to bridge the artificial intelligence and sustainable Human Resource Management performance association. The study was conducted among employees at the officer level from two government agencies in Dodoma. A quantitative research design was employed, and data were collected using closed-ended questionnaires to obtain numerical responses. Stratified random sampling was used to ensure representation of officers from different departments within the selected government agencies, with a response rate of 86.4% from 154 targeted samples. The collected data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) through Smart-PLS version 4.0. The findings indicate that ethical considerations in the application of Artificial Intelligence and green transformational leadership play vital roles in strengthening the positive relationship between Artificial Intelligence and sustainable Human Resource Management performance. Specifically, ethical considerations are found to provide a bridge through which Artificial Intelligence adoption can improve sustainable Human Resource Management performance by promoting transparency, fairness, and respect for stakeholders' interests, while green transformational leadership strengthens this relationship by providing leadership that supports environmental sustainability. Accordingly, government agencies should strategically integrate Artificial Intelligence as a valuable, rare, and difficult to imitate organisational asset. Further, adopt Artificial Intelligence tools based on ethical principles, including transparency, fairness, and employee-centred practices while integrating Artificial Intelligence adoption with strong green transformational leadership to champion sustainable Human Resource Management performance outcomes.*

Key words: *Artificial Intelligence, Ethical considerations, Green Transformational Leadership, Sustainable Human Resource Management Performance and Tanzania*

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1. Introduction

In practice every sector, including public and private, has started to steadily expand and gain significant prominence of artificial intelligence technologies (Ahmad et al., 2021). Artificial Intelligence encompasses a wide range of technologies that enable a computer to carry out tasks, such as adaptive decision-making, that often need human recognition (Tambe et al., 2019). The current Artificial Intelligence applications and technologies are not global recipes; rather, they function as workshops with several tools for carrying out various activities and functions (Nawaz et al., 2024). The use of artificial intelligence in human resource management is increasing and has allowed organizations to improve decision-making, automate routine processes, improve workforce planning, and develop more efficient Human Resource practices (Xu and Ouyang, 2022). At the same time, organizations are placing more importance on sustainable Human Resource Management performance, which is the balance of organizational effectiveness and employee well-being, social responsibility, and long-term sustainability (Mahade 2025). Thus, knowledge of how Artificial Intelligence may contribute to sustainable human resource outcomes has been a key research area. This is

supported by the fact that Artificial Intelligence has tremendous potential to improve sustainable Human Resource Management performance through intelligent recruitment systems, predictive workforce analytics, personalized employee development, and data-driven performance management. Artificial Intelligence can improve the accuracy and efficiency of Human Resource processes, helping organizations achieve sustainable human resource outcomes (Ahmad et al., 2021). However, the successful implementation of Artificial Intelligence also raises important ethical issues related to transparency, fairness, privacy protection, and accountability (Budhwar et al., 2023). These concerns underscore the importance of ethical considerations for unlocking sustainable Human Resource Management benefits from Artificial Intelligence.

While past research has investigated the relationship between technological advancement and Human Resource performance (for instance, Udayanan et al., 2024), little attention has been paid to the underlying mechanisms that explain how Artificial Intelligence contributes to sustainable Human Resource Management performance (Reilly, 2018; Udayanan et al., 2024). In particular, the mediating role of ethical considerations and the moderating role of green transformational leadership are still not well studied. Consequently, this study is framed to investigate the relationship between artificial intelligence and sustainable Human Resource Management performance by examining the mediating effect of ethical considerations and the moderating effect of green transformational leadership. Primarily, ethical considerations of AI applications are suggested to be responsible for the implementation of AI applications (Al-Husseini, 2026), while green transformational leadership can motivate employees and organizations to maximize the sustainability benefits of Artificial Intelligence adoption (Kim & Stepchenkova, 2018). The study is informed by three complementary theoretical perspectives. Firstly, the Resource-Based View (RBV) connotes that Artificial Intelligence is a valuable organizational resource that can enhance sustainable Human Resource Management performance by creating idiosyncratic technological and managerial capabilities (Ndirangu et al., 2023). Secondly, stakeholder theory suggests that ethical Artificial Intelligence implementation creates value for multiple stakeholders through fairness, responsibility, and trust (Al-Husseini, 2026). Third, the transformational leadership theory explains how green transformational leadership enhances the positive impact of Artificial Intelligence by inspiring organizations and employees to synergize technological innovation with sustainability goals (Maaitah, 2018). Therefore, the aim of this study is to explore how Ethical considerations mediation and Green Transformational Leadership moderation can bridge the positive association between Artificial Intelligence and sustainable Human Resource Management performance. Through integration of technological, ethical, and green leadership perspectives, this study provides deeper understanding of responsible Artificial Intelligence adoption in better sustainable Human Resource Management performance outcomes.

1.1 Statement of the problem

Emerging technologies like artificial intelligence, big data, machine learning, mobile technology, the Internet of Things (IoT), geotagging, virtual reality, speech recognition, and biometrics are being used more often as part of the Fourth Industrial Revolution (4IR) (Budhwar et al., 2022). In practical context, in every sector, including private and public sector (Xu and Ouyang, 2022), artificial intelligence technologies have started to steadily expand and gain significant prominence. In an ideal world, artificial intelligence should help organizations to automate Human Resource processes and, at the same time, to foster fairness, transparency, and sustainable people management practices (Elbasi et al., 2022). However, with the growing use of artificial intelligence technologies, many organizations continue to struggle with inconsistent Sustainable Human Resource Management performance due to challenges related to ethical concerns, such as algorithmic bias, privacy issues, and lack of transparency, as well as insufficient leadership support for sustainability initiatives (Chowdhury et al., 2023). These challenges may reduce trust in employees, impede AI acceptance, and limit the accomplishment of sustainable Human Resource Management objectives. Failure to address these issues puts organizations at risk of not fully realizing artificial intelligence's strategic benefits and can undermine sustainable workforce development (Ayanponle et al., 2024).

Although artificial intelligence has the potential to simplify Human Resource Management processes, its effects on indirect mechanisms towards Human Resource Management sustainability are still complicated and need more research (Pereira et al., 2023). Yet, the mechanisms through which artificial intelligence positively impacts sustainable Human Resource Management performance remain underexplored, especially in the public sector (Mahade, 2025). That's why some scholars have reported despite the significant expansion of the adoption of Artificial Intelligence across public sectors (Xu and Ouyang, 2022), the concept and technology look very new both in Tanzanian public organizations and in the entire field of Human Resource Management. Previous findings suggest that many organizations across developing countries continue to struggle with inconsistent Sustainable Human Resource Management performance due to challenges related to Artificial Intelligence ethical concerns, such as algorithmic bias, privacy issues, and lack of transparency, as well as insufficient leadership support for sustainability initiatives (Chowdhury et al., 2023). Therefore, this study aims to investigate the relationship between artificial intelligence and sustainable Human Resource Management performance by examining the mediating role of ethical considerations and the moderating role of green transformational leadership, which would provide empirical evidence to improve sustainable Human Resource Management performance.

1.2 Study Objectives

The general objective of this study was to explore how Ethical considerations mediation and Green Transformational Leadership moderation can bridge the positive association between Artificial Intelligence and sustainable Human Resource Management performance. Three objectives formed specific objective for this study including

a) To establish the relationship between Artificial Intelligence and Sustainable Human Resource Management Performance.
b) To examine the mediating role of ethical considerations in the relationship between Artificial Intelligence and Sustainable Human Resource Management Performance.
c) To examine the moderating role of Green Transformational Leadership in the relationship between Artificial Intelligence and Sustainable Human Resource Management Performance.

2. Literature Review

2.1 Theoretical Framework

2.1.1 Resource-Based View Theory

Barney (1991) is regarded as the most well-known author of the Resource Based View (RBV) theory since he established the theory's fundamental claims and presumptions. Barney (1991) asserts that the organization's competitive advantages are built on its resources and competencies. The resources are divided into two categories: intangible resources, which include intellectual property rights, brand reputations, and talents, and tangible resources, which include assets, equipment, and financial resources (Ndirangu et al., 2026). An organization's competitive advantage depends on its organization and dynamic skills (Olutola et al., 2023). According to Barney (1991), resources must be uncommon, precious, unique, and non-replaceable in order to provide a long-term competitive advantage (Parboteeah & El-Farr, 2023). Consequently, this study conceptualizes artificial intelligence as an intangible resource that should promote the organization's competitive edge. Using RVB perspectives, the study suggests artificial intelligence should be a useful, scarce, and strategically deployable organizational resource that can improve sustainable Human Resource Management performance through improved decision-making, operational efficiency, talent management, and generation of long-term competitive advantage (Mahade, 2025). Theoretically, artificial intelligence-driven data makes it possible for human resource management to operate more effectively, allowing for more strategic practices that would help achieve long-term sustainability goals (Alsaif & Sabih, 2023). For the purposes of this study, therefore, artificial intelligence is defined as a useful technological capability that offers organizations the opportunity to improve human resource decision-making, automate processes, optimize workforce management, and increase sustainable Human Resource practices (Anayat, 2023). According to Anayat (2023), when artificial intelligence capabilities are effectively embedded into human resource systems, organizations can develop unique competencies that improve efficiency, employee outcomes, and long-term sustainability. Hence, RBV is used to provide a theoretical explanation for the positive relationship between artificial intelligence and sustainable Human Resource Management performance, in respect of Hypothesis one (H1)

2.1.2 Stakeholder Theory

This study is also based on stakeholder theory, which maintains that public institutions and organizations must be governed ethically and inclusively to fulfil the expectations and values of all actors with a legitimate stake in organizational results (Mwigune, 2026). The theory identifies, models, and guides how managers should consider stakeholders' interests by answering the basic question of "who or what counts" in decision-making (Lin and Tom, 2018). According to stakeholder theory, organizations should generate value and take into account the interests of various stakeholders, including employees, customers, communities, and society, rather than focusing only on organizational results (Dzomonda 2020). The theory assumes that organizational decisions should address the needs of stakeholders, encourage responsible practices, and maintain trust and legitimacy among affected groups (Vicent et al., 2023). In the context of this study, responsible implementation of artificial intelligence adoption in human resource management requires consideration of ethical issues such as fairness, transparency, privacy, and accountability. By ensuring that artificial intelligence applications benefit workers and other stakeholders, these ethical concerns improve sustainable Human Resource Management performance through ethical and sustainable human resource practices (Mahade, 2025). Stakeholder theory is therefore utilized to hypothesize that artificial intelligence enhances ethical considerations, which in turn supports long-term human resource outcomes. As a result, the theory serves as a basis for comprehending how ethical issues mediate the relationship between artificial intelligence and sustainable Human Resource Management performance in hypothesis two (H2)

2.1.3 Transformational Leadership Theory

The framework for this research was additionally created based on transformational leadership theory, which was formulated by Burns (2004). The notion highlights ways in which leaders are able to inspire and motivate their followers with the help of encouraging them, sharing visions, and addressing their distinct individual requirements for the goal of better productivity (Legeza et al., 2026). Transformational leadership theory describes the manner in which leaders inspire, motivate, and influence employees to go beyond the call of duty by creating a shared vision and promoting commitment to organizational goals (Subramani, 2025). The theory assumes that effective leaders motivate followers through idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration, which encourages innovation and positive behavior change (Nguyen et al., 2024). In this paper, green

transformational leadership uses these principles to promote values oriented towards sustainability, responsible adoption of technology, and commitment to the environment (Al-Husseini, 2026). Artificial intelligence provides technological capabilities that improve sustainable Human Resource Management performance, but its efficiency depends on leadership support and employee engagement. Green transformational leaders increase the value of artificial intelligence by training employees to use technology with strategic and sustainable intent (Legeza et al., 2026). Therefore, Transformational Leadership Theory should be relevant to explaining the positive relationship between artificial intelligence and sustainable Human Resource Management performance, which becomes stronger when green transformational leadership is high, with respect to hypothesis three (H_3)

2.2 Empirical Review

2.2.1 Artificial Intelligence and Sustainable Human Resource Management Performance

Artificial intelligence refers to technologies based on computers that enable machines to perform cognitive tasks such as learning, analysing data, predicting, and making decisions (Cascio and Montealegre, 2016). Artificial intelligence enhances sustainable Human Resource Management performance within the human resource management domain through enhancing human resource efficiency, facilitating data-driven decisions, optimising workforce management, and promoting long-term employee and organisational sustainability (Udayanan et al., 2024). Organisations can invest in digital infrastructure, develop artificial intelligence skills in their employees, implement robust governance practices for artificial intelligence and integrate artificial intelligence into strategic human resource practices to increase their use of artificial intelligence (Rožman et al., 2023). Empirical literature suggests that successful artificial intelligence adoption is positively related to sustainable human resource outcomes through the enhancement of operational effectiveness and support of responsible human resource practices (Mahade et al., 2025). Artificial intelligence is an organisational capability that, when strategically integrated, can lead to superior performance based on the Resource-Based View (RBV) Theory (Ndirangu et al., 2023). Despite the significant expansion of the adoption of artificial intelligence across public sectors (Xu and Ouyang, 2022), the concept and technology look very new both in Tanzanian public organisations and in the entire field of human resource management. For example, findings suggest that many organizations across developing countries continue to struggle with inconsistent Sustainable Human Resource Management performance due to challenges related to Artificial Intelligence ethical concerns, such as algorithmic bias, privacy issues, and lack of transparency, as well as insufficient leadership support for sustainability initiatives (Chowdhury et al., 2023). This study addresses this gap using RBV, which provides a theoretical explanation for the hypothesis that there is a positive relationship between artificial intelligence and sustainable Human Resource Management performance in Tanzanian government agencies (H1).

2.2.2 Ethical considerations as mediator

Technology use must be balanced with the welfare of society in order to be used ethically. Ensuring fairness by checking algorithms for prejudice, safeguarding user privacy through secure data management, and upholding transparency to foster confidence are among the top priorities. Ethical considerations pertain to the rules and procedures that guide the ethical use of technologies by promoting fairness, transparency, responsibility, privacy security, and non-discrimination in organisational decision-making (Budhwar et al., 2023). In sustainable Human Resource Management, ethical considerations build trust among employees, promote responsible human resource practices, and contribute to the long-term sustainability of the organisation (Shin, 2021). Ethical considerations in artificial intelligence adoption are a mechanism through which artificial intelligence contributes to sustainable Human Resource Management performance (Chowdhury et al., 2024). That is to say, artificial intelligence enhances human resource efficiency and decision-making, but sustainable benefits rely on responsible implementation addressing ethical concerns (Rahwan 2018). Defined policies around artificial intelligence governance, algorithm transparency, employee data security, and ethical artificial intelligence training can help strengthen ethics within organisations (Floridi et al., 2021). Although artificial intelligence has the potential to simplify human resource management processes, its effects through indirect mechanisms toward Human Resource Management sustainability are still complicated and need more research (Pereira et al., 2023). Consequently, this study attempts to address this research gap using stakeholder theory. Drawing on stakeholder theory, responsible artificial intelligence practices should create ethical value for employees and other stakeholders and thus contribute to sustainable Human Resource Management performance outcomes (Al-Husseini, 2026). Thus, ethical consideration is hypothesised to mediate the relationship between artificial intelligence and sustainable Human Resource Management performance (H2).

2.2.3 Green Transformational Leadership as Moderator

Green transformational leadership refers to leadership actions that motivate employees to achieve environmental sustainability goals through a shared green vision, motivation, innovation, and commitment to sustainable practices (Arif & Akram, 2018). Through its improved leadership effects, transformational leadership enhances organisational success by promoting individual and team employee performance (Maaitah, 2018). Essentially, green transformational leadership has a major impact on how well an organisation handles ecological problems (Kim & Stepchenkova, 2018). Green transformational leadership improves sustainable Human Resource Management performance through promoting responsible resource use, engaging employees, and aligning organisational strategies with sustainability goals (Sharma, 2020). Green transformational leadership

moderates the relationship between artificial intelligence and sustainable Human Resource Management performance in the context of artificial intelligence adoption by providing guidance to organisations to implement artificial intelligence in a strategic and responsible manner (Vasilaki et al., 2016). Leaders with strong green transformational behaviours encourage employee acceptance of artificial intelligence, encourage ethical use of technology and maximise sustainability benefits from artificial intelligence-based human resource practices (Kim & Stepchenkova, 2018). Organisations can enhance green transformational leadership through sustainability-focused leadership training, green vision development, and employee empowerment (Maaitah, 2018). Scholars agree that artificial intelligence has the potential to streamline Human Resource Management procedures, but its contribution via indirect effects on Human Resource Management sustainability is still composite and requires further study (Mahade, 2025). Subsequently, this study attempts to address this study's lacuna by introducing green transformational leadership as a moderator in the association between artificial intelligence and sustainable Human Resource Management performance using transformational leadership theory. According to Transformational Leadership Theory, efficient green leaders enhance the positive effect of artificial intelligence on sustainable human resource results (Subramani, 2025; Legeza et al., 2026). Thus, green transformational leadership is conceptualised to have a positive moderating role in the artificial intelligence–sustainable Human Resource Management performance relationship (H3).

3. Methodology

This section primarily presents the research design, population and sampling procedures, validity and reliability of the research instruments, data analysis and ethical considerations employed in the study.

3.1 Research design

This study employed a descriptive research design, a kind of research approach that entails characterising characteristics, actions, patterns, or circumstances of a certain population, event, or phenomena (Adewale, 2024). Motivation to opt for descriptive design was grounded on credibility; quantitative data were used to address specific objectives of the research (Welsh et al., 2023). Thus, the study gave a thorough review of how Tanzanian government agencies might bridge the gap between artificial intelligence and sustainable Human Resource Management performance by using a descriptive research design.

3.2 Population and Sampling Procedure

The target population comprised 251 individuals directly working with the two "X" government agencies in Dodoma, Tanzania. Based on the Yamane formula, for a population of 251, the sample size needed at a 95% confidence level (5% margin of error) is approximately 154. Proportional representation of all the strata was ensured by using a stratified random sampling technique (Uwase & Kengere, 2026).

3.3 Survey Questionnaire Design

Primary data were gathered through structured questionnaires with Likert scale items (1 = Strongly Disagree to 5 = Strongly Agree) covering study constructs, namely Artificial Intelligence (AI) as confirmed by Wijayati et al. (2022); Sustainable Human Resource Management Performance (SHRMP) as proposed by Mahade et al. (2025); Ethical considerations (EC) as indicated by Mahade et al. (2025); and Green Transformational Leadership (GTL) as suggested by Chen and Chang (2012) and Singh et al. (2020). Targeted officials were those with "officer level". Officer level in Tanzanian public service are all individuals with at least a first degree who, for this study's sake, had required information.

3.4 Data Analysis

Several statistical methods were employed in the data analysis. Data summary and internal consistency were evaluated using descriptive statistics and Cronbach's alpha. Partial Least Squares Structural Equation Modelling (PLS-SEM) investigated correlations between variables and evaluated hypotheses (Alomari, 2023). While moderation checked when an effect occurs by changing the strength or direction of a link using a moderator, mediation explained how an independent variable influenced a dependent variable via a mediator using PLS-SEM (Igartua & Hayes, 2023). The moderator and mediator variables' roles were carefully examined as PLS-SEM using SmartPLS version 4.0, which assessed model fit and effects (Hair et al., 2021).

3.5 Validity and Reliability

Validity refers to the extent to which the research instrument measures what it is intended to measure (Demanuele, 2025), while reliability refers to the consistency of the research instrument (Alfiyah et al., 2025). In this study, the two were ensured by assessing the measurement model where reliability was checked as proposed by Hair et al. (2017) and Valentini & Damasio (2016). On the other hand, validity was checked as indicated by Afthanorhan (2013) and Cheung et al. (2025). In doing so, the study also ensured validity and reliability by controlling for common method bias (CMB), which is a measurement error that results when the design of a research study rather than the actual link between variables artificially inflates or distorts the strength of the correlations between data (Podsakoff et al. 2012).

3.6 Ethical considerations

Ethical clearance was obtained from the Local Government Training Institute (LGTI), Tanzania, prior to

data collection. Each participant's informed consent was obtained by the researchers (using internal agency data collectors) prior to any data collection. This entailed giving participants a clear and succinct explanation of the goals, methods, and advantages of the study, as well as their right to withdraw and the security of their data (Nakero et al., 2026). In order to maintain anonymity, the respondents' names were kept anonymous. Even the researchers informed the responders that this study was solely for academic objectives using internal data collectors.

4. Results and Discussion

4.1 Respondents profile

The study was carried out with a population of 251 individuals, and the sample size was found to be 154 respondents. A total of 133 questionnaires were returned successfully, with a response rate of 86.4%. Demographic characteristics of the respondents are presented in terms of sex, position, age and work experience. Regarding sex, majority of the respondents were females, comprising 98 (73.7%), while 35 (26.3%) of the respondents were males. The majority of the respondents' position was other position with a total of 22 (16.5%) followed by Monitoring and Evaluation with 11 (8.3%). 9 (6.8%) and Research 9 (6.8%), Accounting and Administration 9 (6.8%). Human Resource Management, Communication and Information, Advocacy and Customer Protection were 8 (6.0%) each. Finance and Risk Management had 7 (5.3%) each, and PMU, ICT and Quality Assurance had 6 (4.5%) each. 3.8%) were Planning and Policy and 4 (3.0%) were Internal Audit. Concerning the age group, the highest group was 35–44 years with 51 (38.3%), followed by 25–34 years with 36 (27.1%), 45–54 years with 25 (18.8%) and 18–24 years with 21 (15.8%). 54 years or older No respondents. Most of the respondents (58, 43.6%) had 11–15 years of work experience, followed by 6–10 years (43, 32.3%), 16–20 years (18, 13.5%), 1–5 years (11, 8.3%), and 21–25 years (3, 2.3%). There were no respondents with 26+ years of work experience.

4.2 Reliability and validity results

First, the study examined Common method bias (CMB) at the beginning of analyses. CMB is a measurement error in which the design of a research study inflates or distorts the strength of the correlations between data, rather than the actual relationship between variables. A Herman single-factor test of variance produced 20.8%, which was not higher than 50% rule of thumb to suggest nonexistence of common method bias issues to address in the current study (Podsakoff et al. 2012). Assessment of composite reliability for variables in table 1 suggest no construct had value less than 0.889 while no value produced Cronbach's alpha value less than 0.700. These results indicates that internal consistency and reliability of the study are within the acceptable level of 0.700 (Valentini & Damasio 2016; Hair et al. 2017). Evaluation of the convergent validity was determined through AVE values in table 1 where all values are greater than 0.500. Values of this nature endorse sound convergent validity since each of them explains more than 50% of the variations in the indicators (Afthanorhan 2013 & Cheung et al. 2024). On the other hand, multicollinearity issues were confirmed by assessing VIF in table 2 where all values recorded values below 5.00. VIF values well below 5.00 ratifying absence of complications related to multicollinearity issues, creating qualifications for execution of other analyses of the study (Hair et al. 2019).

Table 1: Construct reliability and validity

	Outer loadings	Cronbach's alpha	Composite reliability (rho_a)	Average variance extracted (AVE)	VIF
AI		0.908	0.908	0.784	
AI1	0.884				3.160
AI2	0.907				2.699
AI3	0.896				3.094
AI4	0.856				2.469
EC		0.924	0.931	0.765	
EC1	0.891				1.095
EC2	0.878				2.872
EC3	0.834				2.756
EC4	0.864				3.251
EC5	0.906				2.711
GTL		0.883	0.889	0.684	
GTL1	0.833				3.198
GTL2	0.760				2.617
GTL3	0.893				3.290
GTL4	0.769				2.820
GTL5	0.873				2.306

SHRMP		0.898	0.904	0.766	
SHRMP1	0.861				3.291
SHRMP2	0.877				1.551
SHRMP3	0.883				2.924
SHRMP4	0.878				2.746

Table 2: Heterotrait-monotrait ratio (HTMT) - Matrix

	AI	EC	GTL	SHRMP	GTL x AI
AI					
EC	0.388				
GTL	0.105	0.103			
SHRMP	0.552	0.564	0.260		
GTL x AI	0.060	0.161	0.103	0.148	

Table 3: Fornell-Larcker criterion

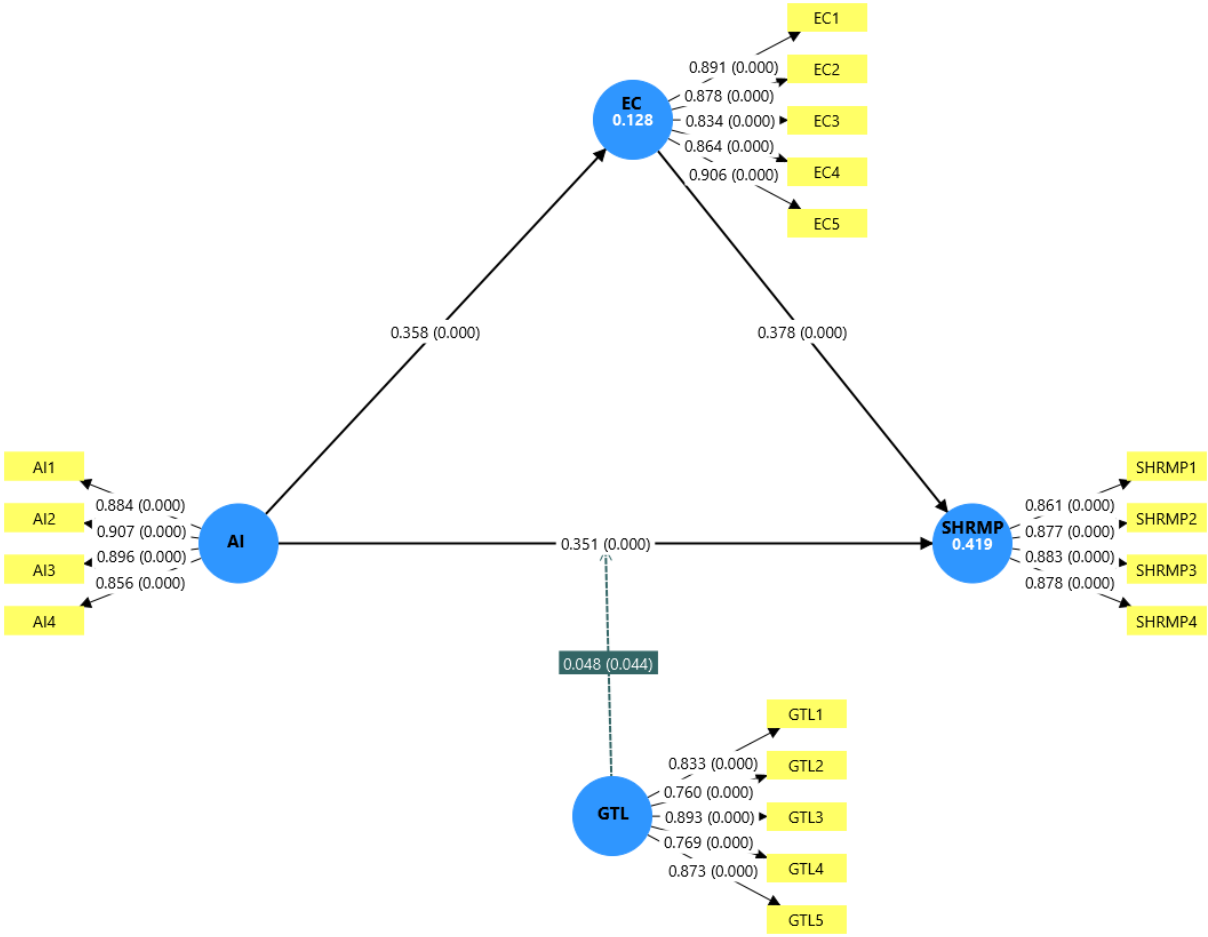
	AI	EC	GTL	SHRMP
AI	0.886			
EC	0.358	0.875		
GTL	0.096	0.072	0.827	
SHRMP	0.505	0.523	0.229	0.875

Table 4: Model fit summary

	Saturated model	Estimated model
SRMR	0.064	0.065
d_ULS	0.705	0.724
d_G	0.425	0.423
Chi-square	2896.720	2869.831
NFI	0.907	0.908

Table 5: Hypothesis testing

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
AI -> SHRMP	0.351	0.351	0.025	14.229	0.000
GTL x AI -> SHRMP	0.048	0.048	0.024	2.010	0.044
AI -> EC -> SHRMP	0.135	0.135	0.013	10.363	0.000



On model fit terms, the study assessed Standardized Root Mean Square Residual (SRMR) in Table 4. A fitting model summary is a statistical description of how well your observed data fit the equation or set of pathways the research has chosen. Table 4 presents Standardized Root Mean Square Residual (SRMR) value of 0.064 which is well below 0.080 suggesting objective model fit (Hu & Bentler 1999). Likewise, PLSpredict LV summary, was assessed to check model predictive power. Primarily, PLSpredict Latent Variable (LV) summary is an out-of-sample prediction report in partial least squares structural equation modelling (PLS-SEM) that estimates the predictive power of study structural model for latent constructs (unobserved variables) through cross-validation on holdout data. In this area Squared Euclidean Distance (d-ULS), Geodesic Distance symbolised (d_G) and Normed Fit index (NFI) was assessed. Assessment of table 4, suggest that the study produced Squared Euclidean Distance (d-ULS) and Geodesic Distance symbolised (d_G) values that are below 0.950 indicating study model has demonstrated the required suitability in PLS-SEM environments (Hair et al. 2019, Hair et al. 2021)

4.3 Hypotheses testing

This study tested three hypotheses (H1, H2, and H3) to address predetermined specific objectives of the study. The study found H1 supported ($\beta = 0.351$; $t = 14.229$; $p = 0.000$) such that sustainable Human Resource Management performance registers positive change with a respective positive change in artificial intelligence. Under resource-based value theory, the findings are interpreted as artificial intelligence tools are valuable, rare, inimitable, and non-substitutable resources for organizations' long-term sustainability, in this case, sustainable Human Resource Management performance. That is to say, artificial intelligence streamlines remote employment tracking, cuts paper waste with process automation, and builds energy-efficient scheduling while aligning human resources with green practices, producing a better sustainable Human Resource Management performance.

This finding endorses previous findings that reported artificial intelligence fosters sustainable Human Resource Management performance within the human resource management domain through enhancing human resource efficiency, facilitating data-driven decisions, optimizing workforce management, and promoting long-term employee and organizational sustainability (Udayanan et al., 2024). This is possible because successful artificial intelligence adoption is positively related to sustainable human resource outcomes through the enhancement of operational effectiveness and support of responsible human resource practices (Mahade et al., 2025). On the other hand, the study found H_2 supported ($\beta = 0.135$; $t = 10.363$; $p = 0.000$) in that ethical considerations mediate artificial intelligence's positive effect on sustainable Human Resource Management performance. It is interpreted that in an event where artificial intelligence is implemented with ethical considerations (adequate

transparency, fairness, and protection of employee privacy), it should be creating value for employees as vital stakeholders.

How Ethical Treatment of Employees Builds Trust, Engagement, and Long-Term Organizational Outcomes such as Sustainable Human Resource Management Performance. This echoes earlier findings that suggested ethical considerations in artificial intelligence adoption play a mechanism through which artificial intelligence contributes to sustainable Human Resource Management performance (Chowdhury et al., 2024). This is apparent because ethical considerations build trust among employees, promote responsible human resource practices, and contribute to the long-term sustainability of the organization (Shin, 2021). Precisely speaking, often artificial intelligence enhances human resource efficiency and decision-making, but sustainable benefits rely on responsible implementation addressing ethical concerns (Rahwan, 2018).

Finally, the study found confirmation of H3 ($\beta = 0.048$; $t = 2.010$; $p = 0.044$) that asserted green transformational leadership moderates' artificial intelligence's positive effect on sustainable Human Resource Management performance. It is interpreted that green transformational leaders are found to motivate and inspire employees to connect their personal values with the green goals of the organization, creating a context in which artificial intelligence tools for sustainable human resource management are actively embraced and effectively used, rather than resisted. Obviously, artificial intelligence provides the raw data and the efficiency, but it is the leader who gives the human drive and the strategic focus to turn that data into sustainable Human Resource Management performance. This finding confirms previous findings that reported green transformational leadership improves sustainable Human Resource Management performance through promoting responsible resource use, engaging employees, and aligning organizational strategies with sustainability goals (Sharma, 2020).

In the context of artificial intelligence adoption, green transformational leadership moderates the relationship between artificial intelligence and sustainable Human Resource Management performance by advising organizations on how to apply artificial intelligence in a responsible and strategic way (Vasilaki et al., 2016). Often, strong green transformational leaders maximize the sustainability benefits of artificial intelligence-based human resource practices, promote ethical technology use, and foster employee adoption of artificial intelligence (Kim & Stepchenkova, 2018).

5. Conclusions and Recommendations

5.1 Conclusions

The general objective of this study was to propose how the mediating role of ethical considerations and the moderating role of green transformational leadership can be used to bridge the artificial intelligence and sustainable Human Resource Management performance association. Accordingly, specific objective one targeted establishing the relationship between artificial intelligence and sustainable Human Resource Management performance. Similarly, specific objective two focused on examining the mediating role of ethical considerations in the relationship between artificial intelligence and sustainable Human Resource Management performance. Again, specific objective three aimed to examine the moderating role of green transformational leadership in the relationship between artificial intelligence and sustainable Human Resource Management performance.

On specific objective one, it is concluded that artificial intelligence is a strategic organizational resource that enables government agencies to develop long-term competitive advantages and improve sustainable human resource management performance. Artificial intelligence adds value to the government agencies by automating routine human resources processes, predicting employee turnover, and efficiently matching skills to available duties and responsibilities. Anyone or any organization can buy artificial intelligence software off the shelf. But how a government agency integrates artificial intelligence into its own unique agency culture is rare and hard for competitors to copy. In the specific objective two context, it is concluded that ethical consideration practices are the necessary bridge for artificial intelligence to enhance the performance of sustainable human resource management by respecting and safeguarding the stakeholder interests.

Practically, artificial intelligence in the workplace raises the basic bars for fairness, transparency, and data privacy (enhanced ethical considerations). Consequently, enhanced ethical considerations foster employee trust, lower turnover, and facilitate long-term, sustainable Human Resource Management performance. In other words, artificial intelligence by itself is not an automatic promoter of sustainable Human Resource Management performance. It only works if it first acts to reinforce ethical considerations. With regard to specific objective three, green transformational leadership enhances the positive effect of artificial intelligence on sustainable Human Resource Management performance and makes the effect much stronger. Artificial intelligence use can lead to better sustainable Human Resource Management performance when government agencies have better green transformational leadership. Artificial intelligence is only a tool for use in government agency work settings. But leaders who champion green values have the potential to motivate employees with a moral compass to use artificial intelligence for green human resources and strategic green objectives (e.g., eliminating paper waste, green hiring, or sustainable employee well-being). Thus, technology like artificial intelligence is not a guarantee of sustainability as such.

Leadership builds the culture that makes artificial intelligence capabilities translate into real sustainable Human Resource Management performance. It is therefore concluded that ethical considerations in the application of artificial intelligence and green transformational leadership serve as a vital bridge that allows artificial intelligence to improve sustainable

Human Resource Management performance by respecting stakeholders' interests and providing green leadership, respectively.

5.2 Recommendations

Based on the findings of this study, three recommendations are proposed for government agencies to bridge the effects of artificial intelligence on sustainable Human Resource Management performance.

1. Government agencies are required to integrate the use of artificial intelligence such that its integration will be a valuable, rare, and inimitability /hard-to-copy strategic asset to ensure better sustainable Human Resource Management performance following Artificial Intelligence adoption (Parboteeah & El-Farr, 2023). For example, in ensuring inimitability (hard to copy), government agencies should combine the agency's unique workplace values with artificial intelligence outputs such that other organizations cannot imitate the exact agency approach.

2. Government agencies should adopt the use of artificial intelligence tools with ethical consideration facets such as transparency, fairness, and employee-centric practices to integrate stakeholders' interests to claim desired sustainable Human Resource Management performance (Vicent et al, 2023). For example, to have decent sustainable Human Resource Management performance, government agencies may ensure employee data collected and gathered through artificial intelligence is used strictly for clear and agreed-upon purposes. Meanwhile, discharge solid and specialized training so that government agency employees can operate alongside artificial intelligence rather than fearing unknown replacement.

3. Government agencies should be proactive about aligning their artificial intelligence tool adoption with strong green leadership to improve sustainable Human Resource Management performance (Subramani, 2025). Primarily, build green leaders through green training such that they grasp the green vision of their respective government agencies. If this is successfully done, green leaders will champion the green vision of the government agency while acting as role models of green habits such that employees take their green lead, such as reducing paper use or promoting remote employment.
4. Government agencies must develop in house expertise to understand formal introduction of Artificial intelligence in an organization is not sufficient to gain decent sustainable Human Resource Management performance because it comes from combination of constructs including mediators and moderators (Vasilaki et al., 2016; Chowdhury et al, 2024). Further, specific capacity building could be directed to Human Resource Management department such that they understand and guide application of Artificial intelligence tools rather than hiring external consultants for every step as it may negatively affect sustainability outcomes.

5.3 Limitations and future study

The study has generated important results that can be of use to researchers, practitioners, and other relevant stakeholders in providing useful insights and practical recommendations. However, as with all empirical studies, there are limitations that should be noted. A significant limitation is the use of a quantitative research design, which primarily focused on numerical data and may not have fully captured the richer experiences, perceptions, and perspectives of the respondents. Also, the relatively small sample size of respondents in the study may limit the generalisability of the results to a broader population. Future studies are therefore encouraged to address these limitations by using mixed-methods or qualitative research approaches to provide a more comprehensive understanding of the topic. Future researchers may also want to use a larger and more diverse sample. Such improvements can provide further or different results and further strengthen the understanding of the matters investigated in this research.

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