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Driving Environmental Citizenship Behavior through Green Human Resource Management and Employee Commitment in Ethiopian Ministries

[1]Getachew Chebsi [2] Zerihun Kinde Alemu [3]Gebre Sorsa

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Abstract

The objective of this study was to examine the effect of green human resource management and employee commitment on organizational citizenship behavior for the environments in Ethiopian ministries. Data were collected via self-reported questionnaires from 382 employees of Ethiopian ministries. Partial least squares structural equation modeling (PLS-SEM) was used to test the proposed hypotheses. The finding revealed that GHRMPs has significant and positive effect on employee environmental commitment and discretionary sustainable behavior. Moreover, bundled GHRMPs synergistically enhance employee commitment, fostering discretionary sustainable behaviors. Beside, EEC serves as a complementary partial mediator, explaining 34.6% of the variance accounted for (VAF) in this link. The novelty of the study lies in applying social exchange theory to the environmental context by recognizing employees' commitment as an intrinsic motivator, linking organizational green practices to voluntary behaviors. The results underscore strategic importance of integrating GHRMPs in Ethiopia's ministries to foster employee commitment and pro-environmental behavior, providing guidance for managers, policymakers and advancing Sustainable Development Goals 12 and 13 through efficient resource use and climate action.

Keywords

Green human resource management practices; employees' environmental commitment; organizational citizenship behavior for the environment; Ethiopia

Article History

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Introduction

Increasing ecological degradation and climate change have increased pressure on institutions to embrace sustainable management practices aligned with Sustainable Development Goals (SDG 12: responsible consumption and production; SDG 13: Climate Action) (Cao et al., 2025; Tsai et al., 2021; United Nations, 2024). In response, institutions are more and more incorporating ecological sustainability practices into their internal management system in order to reduce ecological impact and promote responsible resource utilization (Shah et al., 2023).

[1] Corresponding Author, Ph.D. Candidate, Ethiopian Civil Service University, Department of Public Management, Addis Ababa, Ethiopia, Email: gechchebsi@gmail.com
[2] Ph.D., Associate Professor of Management, Ethiopian Civil Service University, Senior researcher and PhD program coordinator, Email: zeracoc4@gmail.com
[3] Ph.D., Assistant Professor of Management, Ethiopian Civil Service University, Department of Public Management, Addis Ababa, Ethiopia, Email: gebre.sorsa@epsu.edu.et
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Within this context, green human resource management practices (GHRMPs) was introduced as strategic institutional approach for embedding ecological sustainability into human resource system (Miah et al., 2024). GHRMPs embrace green objectives into the HR practices including recruiting and selecting, training, reward system, management of appraisal, and employee involvement, thereby shaping employee attitude and behavior towards environmental sustainability (Efranto et al., 2026; Tang & Amini, 2023).

One of a key outcome of organizational environmental initiatives is environmental citizenship behavior, which is employees' discretionary actions that supports ecological management beyond prescribed job duty (Boiral & Paille, 2012; Sulphey et al., 2024). Such discretionary behaviors include, sharing knowledge on preventing pollution, suggestions for waste reduction, recycling, conserving water, paper and energy, joining environmental conference, encouraging coworkers to take part in sustainable actions (Boiral & Paille, 2012). GHRMPs encourages employees to develop environmental knowledge, skill and motivation that contribute to positive environmental outcomes (Birbirsa & Worku, 2022; Luu, 2019; Yoo, 2024). Studies have reported that, GHRMPs enhance a range of environmental outcomes, including environmental performance, pro-environmental behavior, green creativity and environmental commitment (Al-Ghazali & Afsar, 2020; Luu, 2019; Ly, 2023; Ogiemwonyi et al., 2023).

Despite these findings, literature on the relationship between GHRMPs and OCBE remains less conclusive. While some findings have suggests a positive and significant relationship (Aiswarya & Manivel, 2025; Mostafa & Saleh, 2023; Saputro & Nawangsari, 2021), others indicated the linkage may depend on environmental psychological and contextual factors (Dumont et al., 2016; Hameed et al., 2020; Kakar & Khan, 2022) and even others reported mixed result (Haque et al., 2024; Ogiemwonyi et al., 2023; Yong et al., 2020). Such findings indicate that presence of green HR functions alone may not be sufficient to explain why employees' voluntarily engage in environmental behavior. To better understand these link, scholars have increasingly called for research examining the psychological mechanism through which GHRMPs influences employee environmental behavior (Ren, 2022).

Among the potential mechanisms, Employees' Environmental Commitment (EEC) has emerged as a relevant construct. EEC is employees' emotive connection to, and sense of responsibility towards institution's ecological initiatives (Malokani et al., 2024; Raineri & Paille, 2016). EEC involves a sense of duty directed towards environmental cause (Malokani et al., 2024). Grounded on Social Exchange Theory (SET) of (Blau, 1961), workers that recognizes institutional backing for ecological sustainability through GHRMPs are probable to reciprocate by developing stronger environmental commitment, which subsequently encourages voluntary environmental behaviors (Aiswarya & Manivel, 2025). Ability-Motivation-Opportunity theory also suggests that GHRMP boost workers green competency, motivate them and provide participation opportunities, in this manner strengthening environmental commitment and boost OCBE. In relation to this, literatures have shown that, GHRMPs foster employees' ecological commitment, while environmentally committed employees are more interested to take part in workplace discretionary green behaviors (Pinzone et al., 2016; Tessema et al., 2025). However,

limited research has integrated these relationships in to single framework by examining EEC as a mediator variable in the GHRM bundle and OCBE link in the context of public sector. This is one of the research gap reported in the public sector organizations (Ly, 2023).

Furthermore, extant studies have largely assessed the private industries, and context in Western and Asian countries (Gupta et al., 2025; Ogiemwonyi et al., 2023; Tanova & Bayighomog, 2022). Consequently, inadequate attention has been offered to how GHRMPs promote workers green commitment and environmental citizenship behavior in public sector institutions within developing countries (Gede, 2026). This gap is relevant specifically in Ethiopia, where public institutions play crucial role in executing environmental sustainability policies (Gede, 2026). Therefore, addressing this gap is important not only for contextual relevance but also for extending the explanatory power of the AMO theory and SET beyond Western settings, hence enhancing their external validity in explaining pro-environmental workplace behavior.

In Ethiopia, limited GHRM research has primarily focused on private sector firms and environmental outcomes (Alemu, 2024; Birbirsa et al., 2022; Tessema et al., 2025), with scant attention given to public sector organizations and employees' environmental behavior (Gede, 2026). Such scarcity on GHRMP in the Ethiopian public sector limits the understanding of how HRM supports ecological sustainability, thereby affecting policymakers' and managers' to develop workable strategy in implementing green initiatives

To address the aforementioned research gaps, theoretical model was developed, and corresponding research questions were formulated. These include: (Q1) do GHRMPs directly influence OCBE in Ethiopian ministries? (Q2) do GHRMPs influences EEC in the study area? (Q3) do EEC directly impact OCBE in the ministries? (Q4) does EEC mediates the nexus between GHRM and OCBE in the ministries? Based on social exchange and AMO theories, the result from this study supports SDG12 and 13 by indicating GHRMPs motivate employees' towards sustainable resource utilization and climate action. Managers better to integrate and institutionalize green initiatives in to green recruitment, training, participation, performance evaluation and reward system towards eco-conscious behavior through employees' environmental commitment in federal ministries.

Review of the Literature and Hypotheses Development

The Relationship between GHRMPs and OCBEs

In this research, the direct influence of bundled GHRMPs on OCBE is expected. To better figure out this relationship the AMO theory was applied to environmental context. The theory posits that, employee active ecological engagement is dependent on green ability enhancing actions including green recruitment, training, reward system and appraising employees performance for ecological contributions, and offer them opportunity to share their green experience through participation in sustainability activities (Anwar et al., 2020; Kakar & Khan, 2022). The synergistic nature of the bundle HR practices suggests that their combined implementation may shape employee discretionary green behavior (Mulolli et al., 2025; Yusoff, 2019). Thus, the

paper investigates the collective effects of GHRM bundle rather than effects of individual green HR practices. GHRMPs are conceptualized as integrated bundle practices rather than as isolated HR interventions (Kakar & Khan, 2022; Mulolli et al., 2025).

Therefore, drawing on AMO theory, human resource practices are recognized as pivotal in shaping employees' discretionary behavior (Saifudin et al., 2020; Tang & Amini, 2023). However, findings linking GHRMPs and OCBEs are still negligible particularly in the public sector context (Ly, 2023). In order to address the observed research gap, the research investigated how GHRM bundle shape employees' discretionary behaviors. Accordingly, the subsequent hypothesis is proposed:

***H1**: Green Human Resource Management bundle has positive influence on environmental citizenship behavior*

Nexus between Green Human Resource Management Bundle and Employees' Environmental Commitment

The HR function are intended to encourage workforce skills, motivation, and engagement (Garmendia et al., 2020). Based on (Blau, 1961) social exchange theory if organizations invest on their employees through these practices, employees are tend to reciprocate with desirable positive devotion and behaviors, affective commitment. In this regard studies have suggested that, bundle HRMPs creates synergistic to improve employee capabilities and reinforce their emotional attachment (Garmendia et al., 2020).

In environmental sustainability context, GHRMPs encourage workers to embrace green values and stimulate their ecological commitment (Pham et al., 2019). Studies reported that selected GHRMPs improves workplace green achievements (Azila et al., 2025; Pinzone et al., 2016; Saputra et al., 2024). These practices stimulate workers to demonstrate environmentally committed attitudes (Shoaib et al., 2021), and increase their engagement in eco-friendly behavior (Ly, 2023). However, while the influence of specific GHRMPs on EEC has been explored (Hatipo˘glu & Akduman, 2025; Pham et al., 2019), researches on bundle GHRMPs in the public sector is still under researched. Accordingly, the resulting hypothesis is developed:

***H2**: Green human resource management bundle has positive on employee environmental commitment*

Employees Commitment and Environmental Citizenship Behavior

Employee environmental commitment (EEC) involves willingness to exert extra effort beyond their job description to positively influence desirable outcomes including organizational citizenship behavior (Tuan, 2019). Employees' with responsible environmental feelings have more inclination to involve in eco-friendly practices (Tessema et al., 2025). This implies that individuals reaction to environmental management predicts eco-friendly behavior and when they exhibit extra beyond their job-related duty, they are more likely to assimilate organizations

objectives, and contribute towards its success (Turki & Iqbal, 2024) weak devotion and less passion towards the ecology, they are possibly less concerned on environmental issues in their workplace operation (Khan et al., 2022).

This signifies that commitment is a crucial tool to fuel employee discretionary ecological practice (Afsar & Umrani, 2020), like environmental citizenship behavior (Pinzone et al., 2016). This dedication often exceeds prescribed employment duties, inspiring individuals to join voluntary eco-friendly actions (Raineri & Paille, 2016; Turki & Iqbal, 2024), such as efficient energy use, turn off lights, recycling, proper paper usage behaviors and overall concern for work place environmental issues (Raineri & Paille, 2016). When organizations show strong devotion to sustainability, employees are likely to reciprocate positively, aligning with organizations ecological initiatives related to environment (Turki & Iqbal, 2024). Despite the existing evidences on the issue, the impact of EEC on OCBEs remains underexplored in the Ethiopia's ministries. Based on the literature reviewed, the study posited that:

H3: *Environmental commitment has positive influence on organizational citizenship behavior for the environment.*

Mediation of Environmental Commitment in the GHRM Bundle and Environmental Citizenship Behavior

In this research it is expected that, employee green commitment mediates the positive association between GHRM bundle and OCBE, such that GHRM bundle indirectly foster environmental citizenship behavior through strengthening employee environmental commitment. Based on the framework of AMO, GHRM bundle boost workers green skills, emotion and involvement opportunities, thereby reinforcing environmental commitment that promotes discretionary green behavior beyond formal job requirement (Renwick et al., 2013). Moreover, consistent with Social Exchange Theory, employees are interested to reciprocate organizational investment in environmentally supportive HRM practices through favorable attitudinal and behavioral responses (Kakar & Khan, 2022; Pham et al., 2019), implying that employee environmental commitment constitutes a theoretically meaningful mediating mechanism through which GHRM bundle translates into higher levels of OCBE. Employees' environmental commitment represents an intrinsic emotional tendency that translates organizational green practices into employees' discretionary behaviors (Raineri & Paille, 2016). Previous studies have reported correlation of Employees environmental commitment with green organizational outcomes (Bouraoui et al., 2020; Putri & Mustafa, 2022; Shuang Ren, Kaifeng Jiang, 2022). However, as far as the knowledge of the researchers', studies examining EEC as underlying mechanism in the GHRM and OCBE in public sector is scarce. Thus, based on the tenets of SET, when employees' positively recognize GHRMPs in their workplace, they are committed to reciprocate with discretionary environmental behaviors in Ethiopia's ministries. Accordingly, the consequent hypothesis was developed:

H4: *Employee commitment mediates the nexus between green human resource management and organizational citizenship behavior for the environment.*

Based on the above empirical literature review on GHRMPs, EEC, and OCBE, and guided by theories of AMO and SET, a potential relationship between these variables has been identified and this leads the development of the following conceptual framework to support both empirical investigation and theoretical understanding.

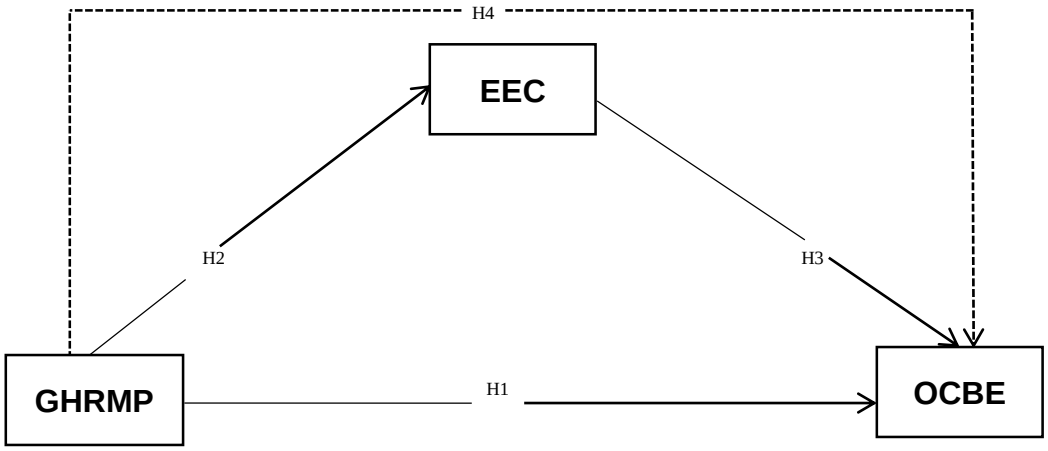


Figure 1: Conceptual framework, the dashed line shows indirect effect

Research Design and Methods

Sampling and Data Collection Procedure

This research used a cross-sectional quantitative research design to investigate the association between GHRM bundle, EEC and OCBE in Ethiopian ministries. The study design was considered appropriate because it allows collecting data from large number of respondents at a single point in time and helps to empirically test the study hypotheses (Bryman, 2012). Thus, this research follows a positivist paradigm, which assumes that reality is objective and measurable via observable phenomena, emphasizing empirical observation, logical deduction, and objective knowledge (Ali, 2024; Creswell & Creswell, 2018). The target population of this research comprises 4,732 employees working in eight federal ministries. The ministries were selected via simple random sampling procedure to ensure fair representativeness and to minimize selection bias. Subsequently, employees were randomly selected from participating ministries, confirming that everyone had equal chance of inclusion in this research. The required sample size was calculated with the formula developed by (Kothari, 2004):

$n = \frac{z^2 p.q.N}{e^2(N-1)+2^2\ p.q}$ $\frac{(1.96)^2(0.5)(0.5)4732}{(0.05)^2(4732-1)+(1.96)^2\ (0.5)(0.5)}$ = 355, accounting for 10% to adjust rate of non-response.

Then out of 394 sample size 382 responses were collected, with 96.9% rate of response. This sample size was also exceeded the minimum recommendations for structural equation modeling, hence ensures sufficient statistical power. The data were gathered from April 5 to July 4, 2024.

3.2. Measurement of Variables

Questionnaire was employed as a data collection instrument in this research, for it enables standardized measurement of variables, facilitate the collection of data quickly, and are suitable for statistical analysis in quantitative research (Bryman, 2012). The questionnaires were adapted from the available sources by a Likert scale with 5-point, by which 1 represented "strongly disagree" and 5 represented "strongly agree" to measure item of GHRMPs, ECC, and OCBEs constructs. All items Cronbach Alpha result is above the recommended value of 0.70, indicates acceptable reliability (Hair et al., 2019). To measure GHRMPs, questions were taken from (Alemu, 2024; Renwick et al., 2013; Tang et al., 2018); EEC items from (Raineri & Paille, 2016), and OCBE (Paillé & Boiral, 2013).

Thus, the green human resource management practices construct comprises five second order dimensions; which are green recruitment and selection with four items, green training and development contains four items, green reward includes four items, green performance appraisal contains six items and green involvement contains six questions. Besides, OCBE contains three second order dimensions explained by eco-initiatives with three questions, eco-civic engagement with four questions, and eco-helping contains three questions. However, EEC was measured using first order multi-items explained by eight items. Finally, after obtaining informed consent from respondents and assuring the confidentiality for their responses, the survey was randomly distributed.

Results and Discussion

In this research both demographic data and descriptive statistics were analyzed by employing SPSS version 26. The PLS-SEM was also utilized for hypotheses testing, for it follows a causal-predictive paradigm for complex constructs having their own indicators, and offers high statistical power to identify significant relationships when they are indeed present (Hair et al., 2019; Sarstedt et al., 2021). The Kaiser Meyer-Olkin (KMO) tested research adequacy of sample indicated 0.96 implies the data was sufficient for further analysis of factors and the Bartlett's Test of Sphericity was also indicated a significant output ($\chi 2$= 7893.205, df = 861, p =.000) confirmed that there was no problem of identity matrix. Therefore, the overall variance explained was also 34.14%, confirmed that common method variance was not an issue in the research for the result was below the required cut off point 50% (Kock et al., 2021). Thus, the results established that there was no common method bias problem in the study.

Assessment Model

The Measurement Model

At this stage, factor loadings, composite reliability and Cornbach alpha reliability, average variance extracted (AVE) to test convergent validity and multi-collinearity were checked. As shown in (Table 2), the lower order construct meets the required cutoff value of 0.70, AVEs result exceeds the required value 0.50, therefore, thereby collinearity was not an issue, all meet the required value (Hair et al., 2011).

The Heterotrait-Monotrait Ratio (HTMT) score presented in Table 3 was below the required point of 0.9, proved the construct was distinct from the rest of the model. In addition, for all constructs AVE square roots was greater than the inter-item constructs correlations which confirm discriminate validity by Fornell and Larcker criterion.

Since the model contain second-order constructs (GHRM and OCBE), the reliability and validity were measured employing two-stage method recommended by (Hair et al., 2017). The first order constructs of OCBE and GHRMPs dimensions were all taken as reflective construct with second-order in the PLS-SEM model. Then, the result of the unobserved variables from the first order constructs or dimensions were used as a proxy for the OCBEs and GHRMPs. However, to assess EEC its proxies are taken directly.

Table 1: First Order Construct Measurement Model

First order constructs	Item	Loading	CA	CR	AVE	VIF
Green Recruitment and Selection	GRS1	0.784	0.774	0.855	0.596	1.558
	GRS2	0.812				1.652
	GRS3	0.736				1.439
	GRS4	0.755				1.439
Green Training and Development	GTD1	0.804	0.792	0.655	0.616	1.605
	GTD2	0.795				1.605
	GTD3	0.77				1.526
	GTD4	0.769				1.537
Green Reward	GR1	0.745	0.825	0.884	0.656	1.537
	GR2	0.812				1.746
	GR3	0.836				1.86
	GR4	0.844				1.942
Green Involvement	GI1	0.766	0.879	0.909	0.624	1.842
	GI2	0.791				1.935
	GI3	0.804				1.998
	GI4	0.763				1.869
	GI5	0.8				2.036
	GI6	0.814				2.046
Green Performance Management	GPM1	0.842	0.916	0.935	0.705	2.409
	GPM2	0.827				2.338

	GPM3	0.825			2.32
	GPM4	0.825			2.32
	GPM5	0.853			2.627
	GPM6	0.864			2.714
Employees Environmental Commitment	EEC1	0.745	0.89	0.912	0.566	1.812
	EEC2	0.701			1.616
	EEC3	0.807			2.112
	EEC4	0.715			1.66
	EEC5	0.74			1.764
	EEC6	0.723			1.692
	EEC7	0.778			1.931
	EEC8	0.802			2.086
Eco-civic engagement	CE1	0.743	0.752	0.843	0.574	1.434
	CE2	0.729			1.421
	CE3	0.754			1.456
	CE4	0.802			1.549
Eco-Helping	EH1	0.746	0.733	0.849	0.653	1.329
	EH2	0.841			1.576
	EH3	0.833			1.54
Eco-Initiative	EI1	0.787	0.743	0.854	0.661	1.435
	EI2	0.819			1.48
	EI3	0.831			1.533

As presented in Table 4 the reliability and validity assessment result of the second order constructs implies loadings and CR of the variables were above 0.70. The AVE score was also above the cutoff point of 0.50. The discriminant validity result using HTMT was below the recommended threshold 0.9 and the Fornell and Larcker criterion result was also within the required threshold. Overall, the measurement model assessment presented in Tables 4 and 5 warranted sufficient first and second-order constructs convergent and discriminant validity.

Table 2: Lower order constructs discriminant validity (Fornell Lacker and HTMT)

	CE	**CR**	**EEC**	**EH**	**EI**	**IN**	**PM**	**RS**	**TD**
CE	**0.758**	0.611	0.694	0.564	0.696	0.586	0.627	0.611	0.588
CR	0.484	**0.81**	0.558	0.602	0.593	0.734	0.664	0.649	0.615
EEC	0.572	0.481	**0.752**	0.68	0.706	0.574	0.548	0.517	0.506
EH	0.422	0.473	0.552	**0.808**	0.627	0.608	0.565	0.552	0.557
EI	0.524	0.469	0.579	0.464	**0.813**	0.588	0.624	0.528	0.576
IN	0.482	0.625	0.511	0.489	0.477	**0.79**	0.702	0.631	0.698
PM	0.524	0.577	0.498	0.464	0.516	0.631	**0.84**	0.65	0.625
RS	0.466	0.518	0.432	0.42	0.403	0.52	0.546	**0.772**	0.619
TD	0.457	0.498	0.427	0.426	0.444	0.583	0.532	0.483	**0.785**

Note: the diagonally bold scores in the left represent the Fornell-Larcker criterion, while those on the right side excluding the bold indicate HTMT values.

Table 3: Higher Order Constructs Measurement Model

Second Order Constructs	Items	Outer loading	CA	CRs	AVE	VIF
Green Human Resource Management	GI	0.845	0.86	0.899	0.642	2.23
	GPM	0.829				2.021
	GRS	0.756				1.654
	GTD	0.765				1.707
	GR	0.807				1.970
Organizational citizenship behavior for environment	CE	0.812	0.727	0.846	0.647	1.460
	EH	0.775				1.351
	EI	0.825				1.530

Table 4: Validation of Second Order Constructs (Fornell Lacker and HTMT)

Constructs	EEC	GHR	OCBE
EEC	**0.752**	0.669	0.874
GHR	0.588	**0.801**	0.89
OCBE	0.706	0.725	**0.804**

Structural Model

The proposed research model states that, GHRMP are directly related with OCBE and indirectly via EEC. Accordingly, as shown in Table 2, the multi-collinearity result tested via VIF indicated that, all VIF results fall below the cutoff point of 3. Model's goodness of fit has been examined through determination of coefficient (R^2), the effect size (f^2) and the result of predictive relevance (Q^2). The R-squared (R^2) result reflects explanatory strength of structural model.

As presented in figure 2 below, the determination coefficient (R^2) of OCBE is 0.645, showing that GHRM explained 64.5% of change in OCBE and 34.6% of the change in EEC, suggesting a moderate explanatory power (Hair et al., 2011). Likewise, the effect size (f^2), which signifies the exogenous constructs provided strong incremental power among GHRM-bundle practices and OCBE (f2 =.0.413), and strong between GHRM-bundle practices and EEC (f2 =.529), which imply a significant influence on the change in R2 values (Sarstedt et al., 2021). Finally, the Q2 value of the endogenous construct was greater than zero hence, predictive relevance was established (Hair et al., 2018).

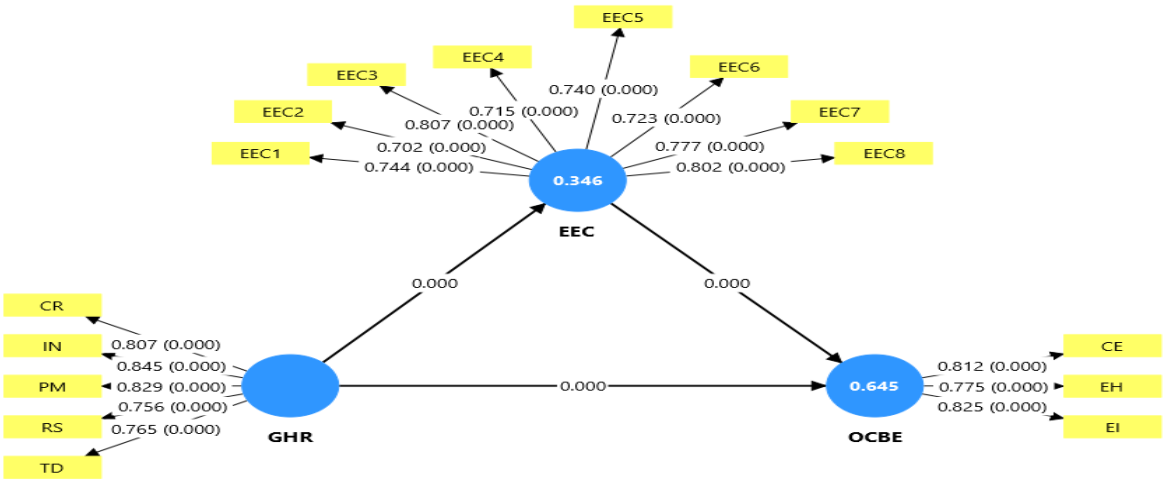


Figure 2: Structural model

Assessment of the Hypotheses

The posited hypotheses were assessed employing bootstrapping technique with 5,000 subsamples through Smart-PLS 4.1.15 was employed. The path-coefficient output presented in Table 5 depicts that green human resource significantly influences OCBEs (β=.474, t=13.148, p<.001, and EEC (β=.588, t=18.018, p<.001). Similarly, EEC positively affects OCBE (β=0.427, t=11,948 p<.001). For all direct relationships, the 95 % bias corrected confidence interval excluded zero, ensuring the statistical significance of the path coefficient. Thus H1, H2, and H3 are supported.

To test H4, the mediating role of EEC in the GHRM and OCBE link was examined using bootstrapping. The indirect of GHRMPs on OCBE through EEC was positive and significant (β=0.251, t = 10.581, <.001), supporting H4. Moreover, as indicated in Table 5 the total effect of green human resource on OCBE was significant (β=0.725, t = 29.163, < .001). After incorporating EEC in to the model, the direct influence of GHRMPs on OCBE was significant though minimized (β =0.474, t=13.148, <.001), indicating partial mediation.

The Variance Accounted for (VAF) value of 34.6% indicates that approximately one third of the effect of GHRMPs on OCBE is transmitted through EEC. The result indicates that commitment constitutes an important mechanism through which green human resource influences worker's discretionary green behavior. The finding is consistent with Social Exchange Theory, which posits that employees reciprocate organizational support for the environment initiatives by developing strong commitment towards environmental activities (Raineri & Paille, 2016). Following the guideline of (Nitzl et al., 2016), the significant positive direct and indirect effects indicate complementary partial mediation. Therefore, GHRMPs influences OCBE both directly and indirectly through the development of employees' environmental commitment.

Table 5: Testing Direct and Indirect Hypotheses

Hypothesis	B	T	95% CI		VIF	f^2	P	Decision	Conclusion
			LCI	UCI					
H1:GHRM-> OCBE	0.474	13.148	[0.415,	0.533]	1	0.413	0.000	Accepted	
H2: GHRM -> EEC	0.588	18.018	[0.537,	0.642]	1.529	0.529	0.000	Accepted	
H3: EEC -> OCBE	0.427	11.948	[0.367,	0.484]	1.529	0.336	0.000	Accepted	
H4: GHRM-> EEC-> OCBE	0.251	10.581	[0.213,	0.29]			0.000	Accepted	Partial mediation

Discussion

This research investigated the underlying mechanism that connects GHRMPs, EEC, and OCBEs in Ethiopian ministries. This link is based on SET and AMO theories. Finding of the study confirmed the theoretical foundations of these relationships in several ways.

First, GHRMP bundle significantly and positively influence OCBE. The finding indicated that when organization's hires candidates with green-mindset, provide them training, participation opportunities, rewarding and evaluate their performance, they are interested to involve in workplace environmental activities, prevent negative impacts, and participate in environmental-conferences. This finding supports the assumptions SET that, when employees positively perceive GHRM-practices; they reciprocate with discretionary citizenship behavior. It also aligns with the AMO theory, which posits GHRMPs boost worker's green ability, opportunity and motivation which subsequently led to OCBEs. The finding is consistent with previous studies (Kakar & Khan, 2022; Tang & Amini, 2023). The implication of this finding is that, federal ministries can foster environmental citizenship behavior through strategically designed HR systems, making GHRMPs an important organizational mechanism to environmental sustainability initiatives.

Second, the study demonstrated that GHRMPs significantly predict EEC. This result supports the tenets of SET which suggests that if employees' recognize GHRMPs, they are interested to reciprocate with improved devotion towards institutional green initiatives which is in line with prior studies (Ly, 2023; Pham et al., 2020), who suggests that, GHRMPs fosters EEC. The result implies that ministries investment on GHRMPs can stimulates employees' internal motivation to ameliorate the environment by enhancing employees' voluntary obligation towards pollution reduction and proper resource utilization, create emotional attachment of for their organization's green initiatives, and value the environmental efforts of their organizations which was also affirmed by (Ansari et al., 2020; Turki & Iqbal, 2024). This finding implies that the influence of GHRMPs extends beyond shaping employee behavior, as these practices also strengthen employee psychological commitment to organizational green activities.

Third, the study confirmed that EEC has significantly positively impacts on OCBE. This result corresponds with prior studies who reported that employee with a strong feeling of attachment and responsibility have more propensity (commitment) to involve in eco-friendly

behaviors (Tessema et al., 2025), including OCBE actions (Luu, 2019; Pinzone et al., 2016), like voluntarily engaging and encouraging coworkers to participate in green activities, and new environmental practices (Boiral & Paille, 2012; Pinzone et al., 2016), and make them unselfish in servicing beyond their jobs (Ly, 2023). Commitment contributes significantly and positively to the OCBE measure (Kusi et al., 2021). Thus, the result entails that EEC can foster OCBEs if they voluntarily carry out environmental actions such as, developing strategies and suggestions to improve energy savings, increase recycling and prevent pollution and turning off lights unused lights (Kusi et al., 2021; Pinzone et al., 2016). The implication of this finding is that, EEC serves as an important psychological drive of OCBE and should be considered as a strategic organizational resource for promoting sustainable workplace behavior.

Moreover, this research reveals that EEC partially mediates the nexus among GHRMPs and OCBE. The result agrees with prior research by (Bos-Nehles et al., 2023; Gupta et al., 2025), who reported that GHRMPs significantly determine employees workplace green behavior. The findings confirm the view that when environmental sustainability is promoted and get attention by organizations through GHRMPs, employees are motivated to practice a voluntary feeling of attachment and committed to their organizations environmental initiatives, which in translated in to citizenship behaviors as also reported by (Raineri & Paille, 2016). Thus, environmental commitment role in this relationship amplifies employees OCBEs. The finding also supports the tenets of SET and AMO theory, which claims organizations adopting green initiatives via GHRMPs can make workforce more devoted and emotionally attached to organizational environmental initiatives and green practices, which in turn increases their workplace discretionary activities, which was also confirmed by research findings by (Ly, 2023; Pham et al., 2019; Tang & Amini, 2023; Tessema et al., 2025). The finding implies that, federal ministries can maximize the effectiveness of GHRMPs by simultaneously strengthening employee environmental commitment, thereby enhancing long term sustainability of green initiatives and OCBE.

Conclusion and Future Direction

Conclusion

The research examined how GHRM bundle influences OCBE through the mediating role of EEC in Ethiopian federal ministries. The finding demonstrates that, GHRM bundle significantly promotes employee's voluntary environmental behavior by enhancing their environmental competencies, motivation and participation opportunities in institutional environmental efforts. The result further reveal that, worker's environmental commitment plays an important mechanism connecting the GHRM bundle and OCBE, indicating that green human resource practices effectiveness is dependent on employees' emotional attachment and sense of responsibility toward environmental initiatives. Examining the underrepresented public sector context, the research adds to the emergent green HRM research and highlights the importance of integrating environmental considerations into HR systems to encourage employees' discretionary environmental behaviors. The study finding suggests that, a comprehensive GHRM bundle can

be an essential institutional approach for strengthening environmental commitment, promoting environmental citizenship behavior and supporting broader sustainability objectives.

Theoretical Contributions

This research offers some theoretical insights to the HR and green management literature. First, the findings extend the current understanding of the GHRM and OCBE nexus, by providing evidence form a public sector context, thereby broadening the applicability of existing green HRM theories beyond the setting in which they have been predominantly examined.

Second, this study contributes to theory by demonstrating that employee ecological commitment functions as an important mechanism through which the GHRM bundle influences OCBE. By identifying and empirically validating this mediating process, the research offers clarification of the way GHRMPs are interpreted into discretionary ecological behaviors. Third, the finding supports the complementary use of Social Exchange Theory and AMO theory in explaining employee environmental behavior. Specifically, the result suggests that green HR practices influences OCBE by simultaneously strengthening employees' environmental capabilities, motivation, opportunities and commitment.

Finally, by examining GHRM as an integrated bundle rather than as isolated functions, the study shows the integrated nature of green HR systems and demonstrates that the combined application of green HR functions constitutes a more comprehensive explanation of workers green behavior than the examination of individual practices alone.

Practical Implications

This research offers important practical insights for public sector institutions, policymakers and human resource managers. First, the public sector institutions can strengthen employees' environmental citizenship behavior by institutionalizing GHRM bundle across the employee life cycle. Integrating environmental consideration into the HR system helps to attract green candidates and enhance worker's environmental competencies, motivation and provide them opportunities to support organizational sustainability objectives.

Second, the study shows the importance of cultivating employees' environmental commitment within public sector organizations. Since environmental commitment partially mediates the GHRM bundle and OCBE nexus, organizations should complement green HR initiatives with efforts that strengthen employees' identification with environmental goals and their sense of duty towards sustainability. Such initiatives can encourage voluntary environmental behaviors, including conserving office resource, reduce waste, energy saving practices, and participating in environmental activities.

Third, the finding provides guidance for policy makers responsible for public sector reform and sustainability agenda. Incorporating green HRM principles into public sector policies, HR guideline and performance management framework can help the institutionalization of sustainability initiatives within government institutions. By embracing green objectives into HR practices and promoting employees' commitment, public institutions can promote their

contribution to sustainable resource utilization, environmental protection, and climate action, thereby supporting the achievement of SDGs 12 and 13.

Limitation and Future Research Directions

In spite of its contributions, the present research has some limitations that provide opportunities for future studies. Initially, the cross sectional research design used in this research may limit the causal link between constructs of the research, thus studies should use longitudinal research to comprehend more causal relationships among GHRMPs, EEC and OCBE. Studies may also use mixed-approach, to triangulate findings that a single method might miss. Second, this research relied on self-administered data gathered via quantitative survey. Although appropriate procedural and statistical remedies were implemented, self-reported questions may be subject to social desirability effects, thus future research could utilize data from different sources, to improve the robustness of results. Third, future studies may examine other intervening variables including organizational culture, individual biospheric value. Finally, while the Ethiopian public sector context offers valuable insights in to this relatively underexplored setting, future research could examine the proposed relationships across other sectors, and institutional settings to generalize the result and identify potential contextual variations.

Informed Consent Statement

Informed consent was obtained from all participants participated in the research.

Data Availability Statement

The data is available according to the request.

Conflicts of Interest

The authors declare that no conflict of interest.

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