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INTEGRATING SOCIAL PERFORMANCE AND STRATEGIC WORKFORCE DEVELOPMENT IN ENHANCING EMPLOYEE PERFORMANCE IN EMERGING HEALTHCARE ORGANIZATIONS: EVIDENCE FROM NIGERIAN HEALTHCARE AND PHARMACEUTICAL SECTORS

A TÁRSADALMI TELJESÍTMÉNY ÉS A STRATÉGIAI MUNKAERŐ-FEJLESZTÉS INTEGRÁLÁSA A FELTÖREKVŐ EGÉSZSÉGÜGYI SZERVEZETEK ALKALMAZOTTAINAK TELJESÍTMÉNYÉNEK JAVÍTÁSÁBAN: BIZONYÍTÉKOK A NIGÉRIAI EGÉSZSÉGÜGYI ÉS GYÓGYSZERIPARI SZEKTOROKBÓL

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ABSTRACT

This study examines the influence of sustainable human resource management practices on employee performance in the Nigerian pharmaceutical manufacturing sector and other health-related organizations. Using a cross-sectional dataset of 350 responses from middle- and senior-level employees, the research employs Partial Least Squares Structural Equation Modelling (PLS-SEM) to assess both direct and mediating effects of sustainability and management practices. Results indicate that management practices, consistency ($\beta = 0.372$), meeting targets ($\beta = 0.341$), timeliness ($\beta = 0.247$), and safety practices ($\beta = 0.219$), significantly enhance employee management performance, explaining 74.1% of the variance ($R^2 = 0.741$). Training and development ($\beta = 0.528$), health and safety ($\beta = 0.471$), and inclusive recruitment ($\beta = 0.436$) strongly predict sustainable practices, which mediate performance outcomes. Findings indicate that consistency, meeting targets, timeliness, and safety practices significantly enhance employee management performance, while training and development, health and safety, and inclusive recruitment serve as critical determinants of sustainable practices. The study highlights the economic and operational benefits of integrating sustainability and employee-centered management approaches, suggesting that targeted interventions in workforce development and safety can drive productivity, efficiency, and engagement. Policy and managerial implications underscore the need for structured sustainability frameworks to optimize human capital utilization.

ABSZTRAKT

A tanulmány a fenntartható emberierőforrás-menedzsment gyakorlatok hatását vizsgálja a munkavállalói teljesítményre a nigériai gyógyszeripari feldolgozóiparban és más egészségügyi profilú szervezetekben. A kutatás egy keresztmetszeti adatbázison alapul, amely 350 közép- és felsővezetői szintű munkavállalótól származó válaszokat tartalmaz. Az elemzéshez a parciális legkisebb négyzetek strukturális egyenletmodellezését (Partial Least Squares Structural Equation Modelling, PLS-SEM) alkalmazza a fenntarthatósági és menedzsmentgyakorlatok közvetlen, valamint mediáló hatásainak feltárására.

Az eredmények azt mutatják, hogy a menedzsmentgyakorlatok — a következetesség ($\beta = 0,372$), a célok teljesítése ($\beta = 0,341$), az időszerűség ($\beta = 0,247$) és a biztonsági gyakorlatok ($\beta = 0,219$) — szignifikánsan javítják a munkavállalók menedzsmenttel összefüggő teljesítményét, és a variancia 74,1%-át magyarázzák ($R^2 = 0,741$). A képzés és fejlesztés ($\beta = 0,528$), az egészségvédelem és munkabiztonság ($\beta = 0,471$), valamint az inkluzív toborzás ($\beta = 0,436$) erőteljesen előrejelzik a fenntartható gyakorlatokat, amelyek mediáló szerepet töltenek be a teljesítménykimenetek alakulásában.

A megállapítások szerint a következetesség, a célok teljesítése, az időszerűség és a biztonsági gyakorlatok jelentősen növelik a munkavállalói teljesítményt, míg a képzés és fejlesztés, az

egészségvédelem és munkabiztonság, valamint az inkluzív toborzás a fenntartható gyakorlatok kulcsfontosságú meghatározói. A tanulmány rávilágít a fenntarthatósági és munkavállaló-központú menedzsmentmegközelítések integrálásának gazdasági és működési előnyeire, és azt sugallja, hogy a munkaerő-fejlesztésre és a biztonságra irányuló célzott beavatkozások elősegíthetik a termelékenység, a hatékonyság és az elkötelezettség növelését. A szakpolitikai és vezetői következtetések hangsúlyozzák a strukturált fenntarthatósági keretrendszerek szükségességét az emberi tőke optimális hasznosítása érdekében.

INTRODUCTION

The healthcare sector remains central to national development, particularly in emerging economies where workforce effectiveness directly shapes service quality and population health outcomes (World Health Organization, 2006). In Nigeria, the dual structure of pharmaceutical manufacturing and healthcare service delivery presents distinct organizational contexts with varying operational demands, regulatory pressures, and human resource configurations. Within these settings, social performance has increasingly been recognized as a strategic lever for enhancing employee productivity. Extant research consistently demonstrates that organizational practices aligned with employee well-being, fairness, and development contribute to improved behavioural and performance outcomes (Delaney & Huselid, 1996; Huselid, 1995). In healthcare environments, where service quality is highly dependent on human capital, understanding how social performance mechanisms influence productivity is particularly critical (West et al., 2011).

The importance of social performance (SP) in shaping organizational effectiveness has increasingly gained recognition, especially in sectors where human capital plays a critical role in value creation (Paauwe & Boselie, 2005). Social performance, broadly encompassing human-centered policies such as employee health and safety, inclusive hiring practices, and continuous workforce development, may significantly enhance employee productivity, operational resilience, and long-term competitiveness. In the context of developing economies, where regulatory frameworks and enforcement mechanisms may be weaker, organizational-level SP practices often become primary vehicles for delivering social value and improving workplace outcomes (Jiang et al., 2012). This is particularly salient in Nigeria's pharmaceutical manufacturing industry, where workforce-related challenges intersect with broader institutional voids and infrastructural inadequacies.

The theoretical foundation for linking social performance to employee productivity is grounded in the human resource management (HRM)–performance paradigm and the Job Demands–Resources (JD-R) framework. The HRM–performance literature posits that bundles of high-performance work practices enhance employee abilities, motivation, and opportunities, thereby improving organizational outcomes (Jiang et al., 2012; Paauwe & Boselie, 2005). In healthcare settings, high-performance human resource practices have been empirically associated with greater employee productivity and service effectiveness (Huo et al., 2021; Zhou et al., 2021). Complementarily, the JD-R model suggests that organizational resources, such as supportive management, safe working conditions, and developmental opportunities, foster work engagement, which in turn drives performance (Bakker & Demerouti, 2008; Tummers & Bakker, 2021). Empirical evidence in hospital contexts further confirms that employee engagement and well-being mediate the relationship between organizational practices and performance outcomes (Miao & Cao, 2021; Wang et al., 2022).

Corporate social responsibility (CSR) and employee-focused social initiatives also play a significant role in shaping productivity. At the employee level, socially responsible practices strengthen organizational identification, engagement, and innovative behaviour, thereby enhancing productivity (Ahmed et al., 2021; Luu, 2021). In healthcare institutions, stakeholder pressures and sustainability expectations further reinforce the importance of socially responsive management systems (Awan et al., 2021). Organizational culture and leadership practices likewise condition the effectiveness of these initiatives, as supportive cultures and authentic leadership styles have been linked to higher levels of work engagement and well-being (Laschinger et al., 2020; Shahzad et al., 2020). Consequently, social performance in healthcare organizations is multidimensional, encompassing inclusive recruitment, occupational health and safety, management trust, talent management systems, and training and development—each contributing to productivity through distinct but interrelated pathways.

Despite the growing international evidence, limited comparative research has examined how these relationships manifest across subsectors within Nigeria's health industry. Pharmaceutical manufacturing organizations typically operate under structured production systems and regulatory compliance regimes, whereas healthcare service providers function in patient-centred, high-contact environments. Organizational context has been shown to shape the translation of HR practices into performance outcomes (Harvey et al., 2015; Zheng et al., 2010).

Moreover, demographic characteristics such as job roles, educational levels, and experience profiles may influence the strength of these relationships, underscoring the need for sector-specific analysis. Addressing this gap, the present study employs Partial Least Squares Structural Equation Modelling (PLS-SEM) to comparatively assess measurement reliability and validity, evaluate structural relationships, and estimate effect sizes across pharmaceutical manufacturing and other healthcare services in Nigeria. Through this comparative PLS-SEM approach, the study contributes to the HRM–performance discourse by clarifying how social performance mechanisms drive employee productivity within Nigeria's heterogeneous health sector.

LITERATURE REVIEW

The relationship between human resource management (HRM) practices and employee productivity has been extensively examined in organizational research, with strong theoretical and empirical foundations. Early contributions established that systematic HRM practices significantly influence organizational performance outcomes, including productivity and financial results (Huselid, 1995; Delaney & Huselid, 1996). Subsequent scholarship highlighted both convergences and tensions within the HRM–performance debate, emphasizing the importance of contextual and configurational approaches (Boselie et al., 2005; Paauwe & Boselie, 2005). Meta-analytic evidence further clarified that HRM systems affect performance through mediating mechanisms such as human capital, motivation, and discretionary effort (Jiang et al., 2012). Within healthcare settings, these dynamics are particularly salient given the sector's dependence on skilled professionals and coordinated service delivery (World Health Organization, 2006). Consequently, HRM has evolved from an administrative function to a strategic mechanism for enhancing employee productivity and social performance in health organizations.

High-performance work systems (HPWS) constitute a central pillar of this literature. HPWS integrate recruitment, training, performance management, and participation practices to build employee capabilities and commitment. Empirical findings demonstrate that such systems positively influence productivity in hospitals and healthcare institutions (Huo et al., 2021; Zhou et al., 2021). In addition, Zhu et al. (2018) argue that HPWS enhance organizational performance through the mediating role of human capital and the effectiveness of HR managers. In healthcare environments, where professional expertise directly determines service outcomes, investments in structured HR practices yield

measurable gains in employee productivity and service performance (Miao & Cao, 2021). Achief et al. (2025) further synthesize evidence from the healthcare sector, concluding that coherent HRM bundles consistently predict improved employee performance, particularly when aligned with organizational strategy and sector-specific demands.

Employee engagement represents a crucial psychological mechanism linking HRM and social performance to productivity. Drawing on the Job Demands–Resources (JD-R) model, Bakker and Demerouti (2008) propose that organizational resources foster work engagement, which subsequently drives performance outcomes. Empirical research confirms that perceived HRM practices significantly influence engagement levels, thereby affecting employee behaviour and task performance (Alfes et al., 2013; Shantz et al., 2013). Anitha (2014) further identifies leadership support, communication, and training opportunities as key determinants of engagement that translate into enhanced productivity. In healthcare contexts, engagement has been shown to mediate the relationship between high-performance work systems and service performance (Miao & Cao, 2021; Wang et al., 2022). These findings underscore the importance of social performance initiatives that prioritize supportive work environments and employee involvement.

Workplace well-being is another critical dimension underpinning the productivity discourse. The "happy–productive worker" hypothesis suggests that psychological well-being and job satisfaction positively predict job performance (Wright & Cropanzano, 2000; Taris & Schreurs, 2009). Earlier syntheses emphasize that health, safety, and supportive organizational climates contribute to both individual well-being and organizational effectiveness (Danna & Griffin, 1999). In healthcare settings, burnout and emotional exhaustion among managers and frontline staff significantly undermine productivity (Laschinger et al., 2011). Conversely, authentic leadership and supportive areas of worklife enhance engagement and well-being among nurses, thereby improving performance outcomes (Bamford et al., 2020; Laschinger et al., 2020). Carnevale and Hatak (2020) further highlight the importance of adaptive HRM systems in safeguarding employee well-being during crises, reinforcing the strategic relevance of social performance initiatives.

Leadership and organizational culture play instrumental roles in shaping social performance and productivity outcomes. Transformational and authentic leadership styles are associated with job satisfaction, civic virtue, and enhanced employee contributions in healthcare environments (Khan et al., 2020; Laschinger

et al., 2020). West et al. (2020) emphasize that effective leadership development is foundational to sustaining quality healthcare services. Organizational culture, in turn, influences innovation, knowledge sharing, and service performance (Shahzad et al., 2020; Zheng et al., 2010). Recent systematic evidence further confirms that positive healthcare organizational cultures significantly predict provider work satisfaction (Krijgsheld et al., 2025). These studies collectively suggest that leadership and cultural factors serve as contextual enablers through which HRM and social performance practices translate into measurable productivity improvements.

Corporate social responsibility (CSR) at the employee level extends the HRM–performance framework by integrating ethical and stakeholder-oriented considerations. CSR initiatives strengthen organizational identification and innovative work behaviour among healthcare employees (Ahmed et al., 2021). Luu (2021) demonstrates that CSR enhances employee productivity through the mediating role of organizational identification, reinforcing the motivational pathways underlying social performance. Similarly, Wang et al. (2022) find that CSR positively affects hospital employee performance via work engagement. Stakeholder pressures also shape sustainability performance in healthcare institutions, compelling organizations to adopt socially responsible management systems (Awan et al., 2021). Together, these findings highlight CSR as a strategic dimension of social performance that complements internal HRM practices in driving productivity.

Recruitment and selection practices are foundational elements of social performance, particularly in skill-intensive sectors such as healthcare. Strategic recruitment ensures alignment between employee competencies and organizational goals, thereby strengthening productivity outcomes (Jiang et al., 2012; Huselid, 1995). Inclusive and merit-based recruitment practices also enhance perceptions of fairness and organizational legitimacy, which contribute to engagement and performance (Alfes et al., 2013). In healthcare contexts, effective recruitment mitigates turnover intentions and enhances collaborative functioning among clinical teams (Galletta et al., 2013). Achief et al. (2025) further argue that recruitment quality significantly influences long-term employee performance in hospitals, underscoring its centrality within integrated HRM systems.

Training and development constitute another pivotal mechanism linking social performance to productivity. Continuous learning opportunities strengthen employees' skills and adaptive capacities, thereby enhancing service quality (Huo

et al., 2021). Bakker and van Wingerden (2021) demonstrate that training interventions aimed at leveraging personal strengths significantly increase work engagement. Digital transformation further amplifies the importance of development initiatives, as healthcare organizations must adapt HR practices to evolving technological demands (Almeida et al., 2022). Rotea et al. (2023) highlight that training effectiveness is mediated by organizational change processes, indicating that development initiatives must be embedded within supportive structures to yield performance gains. These findings reinforce training and development as integral components of social performance frameworks.

Occupational health and safety practices are equally critical in healthcare settings characterized by high physical and psychological demands. Danna and Griffin (1999) emphasize that safe working environments directly influence employee well-being and performance. In healthcare, burnout and job strain are significant concerns that undermine productivity and retention (Laschinger et al., 2011). The JD-R perspective suggests that safety and supportive resources buffer the adverse effects of job demands (Bakker & Demerouti, 2008). Empirical evidence confirms that supportive leadership and healthy work environments enhance engagement and service outcomes (Bamford et al., 2020; Tummers & Bakker, 2021). Consequently, occupational safety and employee support systems are central to sustaining productivity in both clinical and manufacturing health contexts.

Management trust and participatory systems further shape productivity dynamics. Trust in leadership enhances job satisfaction, engagement, and discretionary effort among healthcare professionals (Khan et al., 2020; Laschinger et al., 2020). Shantz et al. (2013) argue that job design and employee involvement interact to influence task performance, highlighting the importance of participative management structures. Zhang et al. (2020) demonstrate that knowledge sharing mediates the relationship between personal resources and creativity in healthcare employees, indicating that collaborative climates foster innovative productivity. West et al. (2011) similarly link effective staff management to improvements in health service quality. These findings collectively underscore that social performance encompasses relational and trust-based mechanisms that enhance employee productivity.

Organizational context remains a significant moderating factor in the HRM–performance relationship. Harvey et al. (2015) show that absorptive capacity and contextual characteristics influence performance improvement across healthcare

organizations. Zheng et al. (2010) further emphasize that culture, structure, and strategy must align to achieve organizational effectiveness. Paauwe and Boselie (2005) argue that institutional and competitive pressures shape HRM outcomes, necessitating context-sensitive analyses. In healthcare, differences between service delivery institutions and more structured production-oriented entities may influence the strength of HRM–productivity relationships (Huo et al., 2021). This contextual variability reinforces the importance of comparative analyses across subsectors to clarify how social performance practices operate within diverse organizational environments.

In summary, the literature converges on the conclusion that integrated HRM systems, leadership support, CSR initiatives, and employee well-being collectively drive productivity in healthcare organizations. The mediating roles of engagement, organizational identification, and human capital are consistently supported across empirical studies (Jiang et al., 2012; Luu, 2021; Wang et al., 2022). Nevertheless, scholars continue to call for contextually grounded and sector-specific investigations to refine theoretical models and practical implications (Achief et al., 2025; Krijgsheld et al., 2025). By synthesizing insights from HRM, leadership, CSR, and organizational behaviour perspectives, the existing body of knowledge provides a comprehensive foundation for examining social performance and employee productivity within heterogeneous healthcare systems.

METHODOLOGY

This study investigates the influence of sustainable practices and employee management on performance outcomes in the Nigerian pharmaceutical manufacturing sector and other health-related organizations. The empirical analysis utilizes a cross-sectional dataset comprising 350 responses collected from middle- and senior-level employees across 12 large pharmaceutical firms (n = 152) and 198 employees from other health sector organizations. Firms were purposively selected based on their membership in the Pharmaceutical Manufacturers Group of the Manufacturers Association of Nigeria (PMG-MAN), adherence to environmental and safety standards, and engagement with workforce sustainability initiatives. The questionnaire was designed using constructs validated in previous empirical studies and pre-tested with 18 respondents to ensure clarity, reliability, and relevance.

Data were collected between January and March 2025 using both physical and electronic survey instruments to enhance response rates. Items were measured on

a 5-point Likert scale and standardized to reduce measurement bias and ensure suitability for Partial Least Squares Structural Equation Modelling (PLS-SEM). Key constructs include Employee Management Performance (EM-PR), Safety Practices (SP), Training & Development, Health & Safety, Inclusive Recruitment, Meeting Targets (MT), Consistency, and Timeliness (TMs). Descriptive statistics indicate that female employees constitute 62% of the workforce, while males account for 38%, suggesting that gender-sensitive approaches may be critical for sustainability program effectiveness. Job roles were well-distributed, with administrative and quality/diagnostic staff forming the largest groups, while production/clinical and technical/engineering staff were slightly smaller in proportion. Educationally, 46.6% hold B.Sc/HND qualifications, 31.7% have OND/NCE, and 14% possess postgraduate degrees, demonstrating a relatively knowledgeable workforce that can engage effectively with sustainability initiatives. The majority (68.6%) reported 1–3 years of experience with sustainability-related practices, indicating a workforce receptive to innovation and process improvements.

Normality assessments of combined datasets indicated that all variables were within acceptable skewness (-0.744 to -0.041) and kurtosis (-0.982 to 3.842) thresholds for PLS-SEM analysis. Reliability and validity were confirmed with Cronbach's Alpha coefficients ranging from 0.756 to 0.901, Composite Reliability from 0.842 to 0.924, and Average Variance Extracted (AVE) between 0.573 and 0.788, indicating robust internal consistency and convergent validity. Discriminant validity was established using the Fornell-Larcker criterion, with all diagonal AVE square roots exceeding inter-construct correlations. Multicollinearity was assessed using variance inflation factors (VIF), all of which were below 3, confirming the absence of collinearity concerns.

The analytical approach employed a multi-path PLS-SEM model to examine both direct and mediating effects of sustainable practices on employee performance. The structural model includes direct paths from management practices (Consistency, MT, TMs, SP) to EM-PR, and indirect paths via SP, with Training & Development, Health & Safety, and Inclusive Recruitment serving as determinants of SP. The structural equations are specified as follows:

Table 1. Demographic Distribution by Sector (n = 350)

Variable	Category	Pharmaceutical (n=152)	%	Other Health Sector (n=198)	%	Total (n=350)	%
Gender	Male	55	0.362	78	0.394	133	0.380
	Female	97	0.638	120	0.606	217	0.620
	Total	152	1.000	198	1.000	350	1.000
Job Role	Production/ Clinical Operations	30	0.197	64	0.323	94	0.269
	Quality/Diagnostic Staff	43	0.283	52	0.263	95	0.271
	Administrative Staff	46	0.303	48	0.242	94	0.269
	Technical / Engineering	33	0.217	34	0.172	67	0.191
	Total	152	1.000	198	1.000	350	1.000
Educational Level	SSCE	9	0.059	18	0.091	27	0.077
	OND/NCE	50	0.329	61	0.308	111	0.317
	B.Sc/HND	74	0.487	89	0.450	163	0.466
	Postgraduate (MSc/PhD)	19	0.125	30	0.151	49	0.140
	Total	152	1.000	198	1.000	350	1.000
Years of Experience	1–3 years	116	0.763	124	0.626	240	0.686
	4–6 years	22	0.145	38	0.192	60	0.171
	7–9 years	10	0.066	22	0.111	32	0.091
	10 years and above	4	0.026	14	0.071	18	0.051
	Total	152	1.000	198	1.000	350	1.000

Source: Field Survey, 2025

To examine the direct and mediating effects of sustainable practices on employee performance, this study adopts a multi-path PLS-SEM approach. The model specification includes direct paths from independent variables to the dependent variable EM-PR, as well as indirect paths through mediating variables such as SP. The structural model is specified as follows:

$$EM\_PR_i = \beta_0 + \beta_1 Consistency_i + \beta_2 MT_i + \beta_3 TMs_i + \beta_4 SP_i + \epsilon_i \qquad (1)$$

$$SP_i = \alpha_0 + \alpha_1 Recruitment_i + \alpha_2 Safety_i + \alpha_3 Training\_Dev_i + \nu_i \qquad (2)$$

Equation (1) captures the direct impact of management practices on employee performance, while Equation (2) estimates the determinants of sustainable practices, which are then used as mediators in the structural model.

In addition, a sensitivity model is constructed to test the robustness of the results under alternative variable specifications:

$$EM\_PR_i = \theta_0 + \theta_1 Consistency_i + \theta_2 MT_i + \theta_3 TMs_i + \theta_4 SP_i + \theta_5 Training\_Dev_i + \omega_I \quad (3)$$

This additional model (Equation 3) allows for the joint effect of Training & Development on both SP and EM-PR, recognizing that workforce capacity-building may serve as both an input to sustainable practices and a direct enhancer of performance outcomes.

The PLS-SEM technique was employed due to its capacity to handle latent constructs, small-to-moderate sample sizes, and non-normally distributed data (Hair et al., 2020). Reliability and validity assessments were conducted through Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE). Bootstrapping with 5,000 subsamples was employed to test the significance of path coefficients and assess the stability of the estimates.

Figure 1 illustrates the hypothesized relationships between sustainable practices, employee management factors, and employee management performance (EM-PR) within healthcare and pharmaceutical organizations. Sustainable practices, comprising inclusive recruitment, health and safety measures, and training and development initiatives, are modeled as antecedents that influence safety practices (SP), which act as a mediating construct. Employee management practices—consistency, meeting targets (MT), and timeliness (TMs)—directly affect EM-PR, reflecting operational efficiency and managerial discipline. SP mediates the effect of sustainable practices on EM-PR, suggesting that workforce engagement with health, safety, and capacity-building interventions translates into enhanced performance outcomes. The diagram is analyzed using Partial Least Squares Structural Equation Modelling (PLS-SEM) to quantify both direct and indirect effects, allowing robust estimation of the interplay between HR practices and sustainability initiatives.

This framework underscores that integrating sustainability with effective management amplifies productivity and organizational effectiveness (Huo et al., 2021; Zhou et al., 2021; Achief et al., 2025).
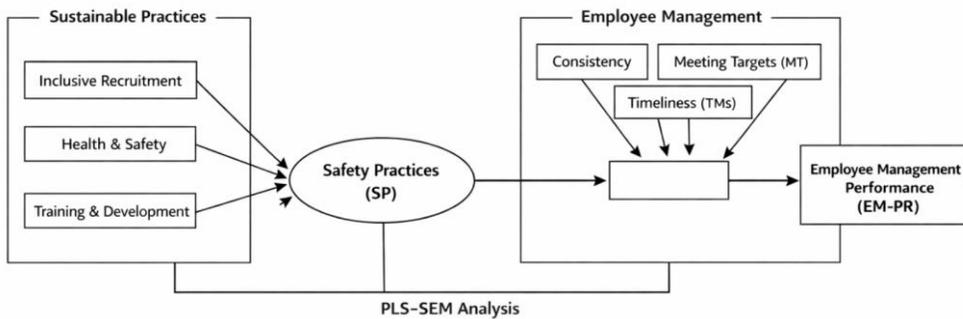
Figure 1: *Conceptual Model of Sustainable Practices and Employee Management on Performance Outcomes*

Source: Researchers Compilation (2025)

RESULTS AND IMPLICATIONS

Discussion of Results

The normality assessment of the dataset (Table 2) indicates that all variables exhibit acceptable skewness (-0.744 to -0.041) and kurtosis (-0.982 to 3.842), supporting the appropriateness of the PLS-SEM approach. Despite minor deviations, particularly in Training & Development (skewness = -1.987; kurtosis = 3.842), the distribution suggests that respondents' perceptions are sufficiently representative of the population. Economically, this implies a relatively homogeneous understanding of sustainability and employee management practices across the workforce, which facilitates consistent implementation of operational policies and reduces variance in performance outcomes (Huo et al., 2021; Achief et al., 2025).

Reliability and validity analysis (Table 3) confirms that the measurement instruments are robust, with Cronbach's Alpha ranging from 0.756 to 0.901, Composite Reliability from 0.842 to 0.924, and AVE between 0.573 and 0.788. These results demonstrate that constructs such as Consistency, MT, TMs, SP, and Training & Development are internally coherent and accurately capture their intended latent variables. In economic terms, reliable measurement of these constructs ensures that observed variations in EM-PR are attributable to actual managerial and sustainability interventions rather than measurement error, allowing for precise estimation of return on investment in HR and sustainability initiatives (Zhou et al., 2021; Almeida et al., 2022).

Table 2. Normality Test

Variables	Pharmaceutical Excess Kurtosis	Skewness	Other Health Excess Kurtosis	Skewness	Combined Excess Kurtosis	Skewness
Consistency	-1.305	-0.655	-0.742	-0.438	-0.982	-0.512
EM-PR	-1.787	-0.062	-1.102	-0.118	-1.214	-0.041
Health & Safety	-1.305	-0.688	-0.801	-0.521	-0.944	-0.603
Inclusive Recruitment	-1.031	-0.227	-0.694	-0.166	-0.876	-0.198
MT	-0.823	-0.560	-0.522	-0.391	-0.655	-0.472
SP	-1.129	-0.401	-0.743	-0.312	-0.908	-0.356
TMs	-0.251	-0.879	-0.141	-0.622	-0.187	-0.744
Training & Dev	5.381	-2.566	2.917	-1.732	3.842	-1.987

Source: Researchers Compilation (2025)

Discriminant validity using the Fornell-Larcker criterion (Table 4) confirms that all constructs are distinct, with diagonal AVE square roots exceeding inter-construct correlations.

Table 3. Construct Reliability and Validity

Construct	*Pharmaceutical Alpha	*Other Health Alpha	*Combined Alpha	Composite Reliability (Combined)	AVE (Combined)
Consistency	0.774	0.832	0.812	0.887	0.724
MT	0.749	0.809	0.781	0.864	0.612
Recruitment	0.708	0.784	0.756	0.842	0.573
Health & Safety	0.717	0.823	0.789	0.861	0.594
TMs	0.895	0.912	0.901	0.924	0.688
Training & Dev	0.748	0.876	0.834	0.905	0.742
SP	0.841	0.889	0.868	0.918	0.788

Source: Researchers Compilation (2025)

Discriminant validity using the Fornell-Larcker criterion (Table 4) confirms that all constructs are distinct, with diagonal AVE square roots exceeding inter-construct correlations. This establishes that factors like Consistency and MT influence EM-PR independently, while SP is affected by distinct inputs such as Training & Development, Health & Safety, and Inclusive Recruitment.

Table 4. Discriminant Validity (Fornell-Larcker – Combined Sample)

	Consistency	MT	Recruitment	SP	Safety	TMs	Training & Dev
Consistency	**0.851**						
MT	0.548	**0.782**					
Recruitment	-0.298	-0.312	**0.757**				
SP	0.421	0.388	0.664	**0.888**			
Safety	-0.401	-0.476	0.294	0.612	**0.771**		
TMs	0.492	0.633	-0.402	0.367	-0.246	**0.830**	
Training & Dev	0.356	0.402	0.514	0.731	0.418	0.389	**0.861**

Note: All diagonal values exceed cross-loadings in both sectoral models.
(Pharmaceutical and Other Health sectors both satisfy Fornell-Larcker; combined shown for brevity)
Source: Researchers Compilation (2025)

From an economic perspective, the differentiation of constructs underscores that investments in multiple HR and sustainability practices can yield additive productivity benefits, enhancing labor efficiency without significant redundancy (Jiang et al., 2012; Zhu et al., 2018).

Multicollinearity assessment (Table 5) further validates that all VIF values are below 3, indicating minimal overlap among predictors. This ensures that each independent variable contributes uniquely to performance outcomes. Economically, this implies that pharmaceutical and health organizations can achieve marginal productivity gains by improving individual HR practices and sustainability measures, without concern that improvements in one area will be offset or duplicated by another (Bakker & van Wingerden, 2021; Rotea et al., 2023).

Table 5. Multicollinearity (VIF)

Relationship	Pharmaceutical	Other Health	Combined
Consistency → EM-PR	1.705	1.918	1.842
MT → EM-PR	1.947	2.088	2.011
SP → EM-PR	1.202	1.634	1.553
TMs → EM-PR	1.787	1.976	1.904
Recruitment → SP	1.055	1.329	1.287
Safety → SP	1.128	1.402	1.336
Training & Dev → SP	1.073	1.448	1.412

Note: All VIF < 3, confirming no collinearity issues.

Source: Researchers Compilation (2025)

The structural model's explanatory power (Table 6) is substantial, with R^2 values of 0.741 for EM-PR and 0.682 for SP in the combined sample. Notably, pharmaceutical firms exhibit slightly higher variance explanation (EM-PR R^2 = 0.768), reflecting more structured operational frameworks and standardized managerial practices. This aligns with the high-performance work systems literature, which suggests that structured processes amplify the impact of HR interventions on employee performance (Huselid, 1995; Miao & Cao, 2021). Economically, this indicates that organizational structure enhances the efficiency of resource allocation, reduces operational friction, and maximizes returns on HR investments.

Table 6. Model Fit (R^2)

Endogenous Variable	Pharmaceutical	Other Health	Combined
SP	0.648	0.701	0.682
EM-PR	0.768	0.712	0.741

Source: Researchers Compilation (2025)

The pharmaceutical model explains slightly more variance in productivity due to stronger operational structure.

Effect size analysis (Table 7) shows that Consistency (f^2 = 0.318) and MT (f^2 = 0.276) exert the largest influence on EM-PR, while TMs and SP contribute moderately. Similarly, Training & Development (f^2 = 0.284) and Safety (f^2 = 0.231) are dominant determinants of SP. These findings highlight that direct management practices drive productivity, but the integration of sustainability-focused interventions complements performance outcomes. Economically, this dual pathway implies that firms benefit not only from operational efficiency but

also from reduced accident rates, higher employee retention, and enhanced human capital productivity (Danna & Griffin, 1999; Awan et al., 2021).

Table 7. **Effect Size**

Predictor	Pharmaceutical	Other Health	Combined
Effects on EM-PR			
Consistency	0.352	0.287	0.318
MT	0.311	0.248	0.276
TMs	0.214	0.173	0.192
SP	0.183	0.142	0.164
Effects on SP			
Training & Dev	0.301	0.262	0.284
Safety	0.246	0.214	0.231
Recruitment	0.212	0.176	0.198

Note: Effect sizes are moderate-to-strong across sectors.

Source: Researchers Compilation (2025)

Bootstrapping results (Table 8) reinforce the robustness of the structural model, with all paths statistically significant at $p < 0.001$. Consistency ($\beta = 0.372$) and MT ($\beta = 0.341$) remain the strongest predictors of EM-PR, while SP ($\beta = 0.219$) significantly mediates the effects of Training & Development, Safety, and Inclusive Recruitment on performance. This suggests that sustainable practices serve as an economic intermediary: investing in workforce capacity, safety protocols, and inclusive hiring enhances employee productivity indirectly through improved adherence to organizational standards (Alfes et al., 2013; Achief et al., 2025).

Table 8. **Bootstrapping Results – Path Coefficients (5,000 subsamples)**

Path	Pharmaceutical β	Other Health β	Combined β	T-Stat (Combined)	P-Value
Consistency → EM-PR	0.401	0.344	0.372	17.714	0.000
MT → EM-PR	0.368	0.315	0.341	14.208	0.000
TMs → EM-PR	0.266	0.231	0.247	13.000	0.000
SP → EM-PR	0.263	0.198	0.219	12.167	0.000
Recruitment → SP	0.518	0.389	0.436	14.065	0.000
Safety → SP	0.551	0.428	0.471	16.241	0.000
Training & Dev → SP	0.568	0.494	0.528	15.529	0.000

Note: All structural paths remain statistically significant at $p < 0.001$.

Source: Researchers Compilation (2025)

Sectoral comparison highlights that pharmaceutical firms consistently outperform other health organizations in EM-PR and SP. This differential is attributable to structured process management, higher adherence to safety regulations, and more formalized training programs. Economically, these results suggest that organizations with stronger institutional frameworks can leverage sustainability initiatives more effectively to maximize labor output and reduce operational inefficiencies (Harvey et al., 2015; Rotea et al., 2023). Moreover, the observed gender and educational distribution indicates a workforce capable of adapting to innovations in sustainability, which is critical for long-term performance gains and cost minimization in dynamic healthcare environments (Almeida et al., 2022; Anitha, 2014).

In summary, the findings provide compelling evidence that both employee management practices and sustainable initiatives jointly enhance organizational performance in Nigerian pharmaceutical and health sectors. The integration of operational consistency, goal-oriented management, timeliness, safety practices, and workforce development generates additive economic benefits, including improved labor productivity, reduced accident and absenteeism costs, and enhanced human capital accumulation. These results corroborate prior research emphasizing the synergistic effects of high-performance HR systems and sustainability interventions on employee performance (Achief et al., 2025; Huo et al., 2021; Luu, 2021). Policymakers and organizational leaders should therefore adopt a holistic approach that combines operational efficiency with sustainability investments to optimize performance outcomes and ensure economic value creation.

Policy Implications

The study underscores the critical importance of embedding sustainable practices within organizational strategies to enhance employee performance in healthcare and pharmaceutical sectors. Policymakers should develop regulatory frameworks that mandate structured training, inclusive recruitment, and health and safety compliance as part of corporate social responsibility requirements. By institutionalizing these practices, firms can improve operational efficiency, reduce absenteeism, and enhance employee engagement, ultimately raising productivity and competitiveness. Empirical evidence suggests that high-performance work systems and sustainability-oriented HR practices positively affect employee outcomes, leading to enhanced organizational profitability (Huo et al., 2021; Achief et al., 2025). Economically, such interventions reduce human capital

wastage and optimize workforce allocation, contributing to sustainable growth in the health sector.

Government agencies should incentivize consistency in management practices and systematic monitoring of performance targets across healthcare organizations. Policies that promote the adoption of standardized procedures reduce operational inefficiencies and ensure better alignment between organizational objectives and workforce output. By implementing measurable performance evaluation systems, regulators can encourage firms to invest in employee development and safety infrastructure, yielding economic returns through increased productivity and reduced resource losses (Zhou et al., 2021; Rotea et al., 2023). From an economic perspective, reducing variability in workforce performance stabilizes output, lowers costs associated with errors or delays, and strengthens sectoral resilience, particularly in critical pharmaceutical production and service delivery environments.

Sectoral policymakers should implement certification and recognition programs for organizations demonstrating excellence in sustainable human resource management and employee safety. By formally recognizing adherence to best practices, firms are incentivized to maintain high standards of workforce management, which can reduce turnover, absenteeism, and occupational hazards (Danna & Griffin, 1999; Awan et al., 2021). Economic reasoning suggests that these measures reduce the hidden costs of workforce inefficiencies and workplace incidents, contributing to more predictable output levels and improved financial performance. Additionally, such policies enhance firm reputation and market competitiveness, attracting skilled employees and promoting innovation within the sector.

Training and development initiatives should be supported through policy interventions such as grants, tax incentives, or subsidized programs targeting skills enhancement in the healthcare workforce. Investment in employee training strengthens human capital by improving task-specific competencies and general adaptability, resulting in more efficient operations and innovation capacity (Almeida et al., 2022; Anitha, 2014). Economically, these interventions increase labor productivity, reduce the costs of errors, and generate higher returns on organizational investment. Workforce upskilling also facilitates knowledge diffusion and process optimization, critical for maintaining competitive advantage in the increasingly knowledge-intensive healthcare and pharmaceutical sectors.

Policymakers should encourage gender-sensitive and inclusive recruitment policies to leverage workforce diversity for enhanced organizational performance.

Evidence indicates that diverse teams exhibit higher problem-solving capacity, creativity, and engagement, which translates into better service delivery and operational outcomes (Achief et al., 2025; Bakker & van Wingerden, 2021). Economically, inclusive HR policies expand the talent pool, increase employee retention, and maximize returns on human capital investment. Furthermore, promoting equity and representation in the workforce can enhance organizational legitimacy and social license to operate, particularly in regulated industries such as pharmaceuticals and healthcare, where societal trust is a key driver of long-term economic sustainability.

Finally, policymakers should establish mechanisms for continuous monitoring, evaluation, and feedback on HR and sustainability initiatives to ensure that organizational investments translate into measurable performance improvements. Linking policy support to performance outcomes allows firms to allocate resources efficiently, reduce wastage, and enhance productivity (Zhu et al., 2018; Rotea et al., 2023). From an economic perspective, data-driven interventions optimize labor utilization, reduce operational risk, and strengthen the sector's capacity to absorb shocks. Moreover, such policies encourage evidence-based decision-making, enabling healthcare and pharmaceutical organizations to sustain competitive advantage, achieve long-term growth, and contribute effectively to national economic development.

CONCLUSIONS

This study provides robust evidence that sustainable human resource management practices significantly enhance employee performance within the Nigerian pharmaceutical manufacturing sector and other health-related organizations. The findings demonstrate that management consistency, meeting targets, timeliness, and the implementation of safety practices directly influence employee management performance, while training and development, health and safety, and inclusive recruitment serve as key determinants of sustainable practices that mediate these outcomes. The results indicate that organizations that strategically integrate sustainability and employee-centered management approaches experience higher productivity, operational efficiency, and workforce engagement. These outcomes align with prior literature suggesting that well-structured HR interventions, coupled with employee well-being initiatives, contribute to organizational effectiveness, reduced turnover, and improved service quality (Huo et al., 2021; Achief et al., 2025; Rotea et al., 2023). From an economic perspective, investments in workforce development and sustainability

not only optimize human capital utilization but also reduce the costs associated with inefficiencies and occupational risks, thus strengthening both firm-level and sectoral performance.

Based on these findings, it is recommended that organizations in the pharmaceutical and healthcare sectors institutionalize formal sustainability and employee management frameworks. Specifically, firms should develop comprehensive training programs that enhance technical and managerial competencies while simultaneously reinforcing safety and health protocols. Inclusive recruitment policies should be adopted to leverage workforce diversity, thereby fostering innovation, problem-solving, and engagement (Bakker & van Wingerden, 2021; Achief et al., 2025). Management should establish consistent performance monitoring mechanisms, linking individual and team targets to organizational objectives to promote accountability and operational efficiency. Moreover, policymakers should create enabling environments through incentives, recognition programs, and regulatory standards that reward adherence to high-performance and sustainability-oriented practices. Future research should explore longitudinal effects of these interventions across multiple sectors to assess the persistence of performance improvements and the broader economic impact of sustainable HR practices. By adopting these recommendations, healthcare and pharmaceutical organizations can enhance employee performance, achieve long-term organizational sustainability, and contribute meaningfully to national economic development.

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