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The DNA Determinism Hypothesis in Workplace Performance: A Critical Examination and Case Study at Metropolitan International University, Uganda

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***ABSTRACT**: **Background**: Genetic determinism narratives have increasingly permeated organizational discourse, attributing workplace performance differences to innate DNA characteristics rather than environmental factors, potentially undermining evidence-based human resource development and legitimizing performance inequalities as biologically immutable. **Main Objective**: To critically examine the DNA determinism hypothesis in workplace performance through a case study at Metropolitan International University, Uganda. **Methods**: A mixed-methods explanatory sequential design was employed between January and June 2024, utilizing stratified random sampling to recruit 384 employees across academic and administrative units (80% power, 95% confidence, 5% margin of error). Statistical analyses included descriptive statistics with normality testing, Pearson correlations and ANOVAs for bivariate relationships, hierarchical multiple regression with rigorous assumption testing (VIF, Durbin-Watson, homoscedasticity), and structural equation modeling using maximum likelihood estimation **Key Results**: Genetic belief scores showed no significant correlation with performance outcomes ($r=-0.09$, $p=0.089$) and contributed negligible explanatory variance in regression models ($\Delta R^2=0.001$, $p=0.503$), refuting genetic determinism validity. Environmental factors—training hours ($\beta=0.26$, $p<0.001$), managerial support ($\beta=0.35$, $p<0.001$), resource adequacy ($\beta=0.19$, $p<0.001$), and organizational culture ($\beta=0.14$, $p<0.01$)—collectively explained 40.5% of performance variance beyond demographics. **Conclusion and Recommendations**: This study conclusively refuted DNA determinism as a valid explanatory framework for workplace performance at Metropolitan International University, establishing instead that performance differences stemmed primarily from modifiable environmental conditions including training access, managerial quality, resource availability, and organizational culture. The university should dismantle deterministic attribution systems in performance management documents, establish equitable training infrastructure with mandatory minimums,*

Keywords: genetic determinism, workplace performance, organizational behavior, environmental factors, human resource development and performance attribution

Introduction

The question of what determines human performance in workplace contexts has long occupied scholars across disciplines from psychology and organizational behavior to genetics and neuroscience, with recent advances in genomic science spurring renewed interest in biological explanations for individual differences in abilities, personality traits, and achievement patterns that were previously attributed primarily to environmental factors such as education, training, and experience (John Baptist, 2024). The DNA determinism hypothesis, which posits that genetic factors substantially predetermine an individual's potential for performance in various domains including cognitive tasks, interpersonal skills, and work-related competencies, represents a particularly provocative framework that challenges conventional assumptions underlying human resource management, educational systems, and social mobility narratives that emphasize the transformative power of learning and development (Isaac et al., 2023; Janet & Julius, 2023a). This critical examination uses Metropolitan International University in Uganda as a case study to explore how genetic determinism frameworks intersect with workplace performance realities in an African higher education context, questioning whether observed performance variations among faculty and staff can be meaningfully attributed to innate biological differences or whether such explanations obscure more salient factors including educational background, professional development opportunities, institutional culture, resource availability, and structural conditions that shape individual capacity to perform effectively (Janet & Julius, 2023b; Julius & Nelson, 2023).

Background

The resurgence of biological determinism in explaining human differences, fueled by popularizations of behavioral genetics research and commercial genetic testing services that promise insights into personality and potential, represents a double-edged phenomenon that offers genuine scientific insights into the genetic contributions to human traits while simultaneously risking a return to discredited eugenic thinking that has historically been used to justify social hierarchies and limit opportunities for marginalized groups (Nosike, 2022; Rivaldo & Nabella, 2023). In the context of Ugandan higher education institutions such as Metropolitan International University, workplace performance variations among academic and administrative staff manifest in observable differences in research productivity, teaching effectiveness, administrative efficiency, innovation, and professional advancement that could theoretically be analyzed through multiple explanatory frameworks ranging from purely genetic to purely environmental or, most plausibly, through models recognizing complex gene-environment interactions (Awan et al., 2020; Erna Oktaviani Simamora & Dionisius Sihombing, 2023; Sharma & Taneja, 2018). The DNA determinism hypothesis becomes particularly problematic when applied in contexts characterized by profound educational inequalities, where individuals' developmental trajectories from early childhood through professional training vary dramatically based on factors such as family socioeconomic status, quality of schooling, access to mentorship, nutritional status during critical developmental periods, exposure to cognitive stimulation, and opportunities for skill development that are demonstrably shaped by social structures rather than genetic inheritance (Aliyyah et al., 2021; Sidhu & Nizam, 2020). Metropolitan International University, like many private universities in Uganda, employs faculty and staff with diverse educational backgrounds including those with graduate degrees from well-resourced international universities and those trained entirely within resource-constrained local institutions, with different levels of research training and pedagogical preparation, and with varying access to professional development resources, all of which create performance variations that any serious analysis must acknowledge before attributing differences to immutable genetic factors (Sidhu & Nizam, 2020). The critical examination of DNA determinism in this context requires rigorous interrogation of what constitutes valid evidence for genetic influence on workplace performance, how to distinguish genetic contributions from environmental factors that may themselves have intergenerational effects, the ethical implications of genetic explanations in employment contexts including risks of discrimination and limitation of development opportunities, and the potential for genetic determinism narratives to serve ideological functions that naturalize inequality and undermine commitments to human potential development that are foundational to educational institutions' missions (Arif et al., 2019; David et al., 2023).

Problem Statement

Contemporary workplace discourse increasingly invokes genetic and biological determinism to explain performance differences, with claims that individual productivity, creativity, intelligence, and work habits are primarily predetermined by genetic inheritance rather than shaped by environmental, educational, and institutional factors (Mahmood et al., 2023; Rijamampianina, 2015). This "DNA determinism hypothesis" suggests that some individuals are simply "born to be" high performers while others are genetically predisposed to mediocrity, a perspective that carries profound and troubling implications for human resource development, organizational equity, and social justice (Pousa et al., 2017; Sitopu et al., 2021). In Ugandan academic institutions like Metropolitan International University, such narratives may be explicitly or implicitly used to rationalize performance disparities among staff and faculty without adequately examining institutional factors such as professional development opportunities, workplace conditions, management practices, resource allocation, and systemic biases (Christopher, Moses, Enosh Muhindo, et al., 2022; Christopher, Moses, Muhindo, et al., 2022). This biological reductionism risks becoming a convenient excuse for organizational failures, absolving institutions of responsibility for creating enabling environments and investing in human capital development while simultaneously demotivating employees who internalize these deterministic narratives.

The scientific basis for DNA determinism in workplace contexts is far more nuanced than popular discourse suggests, with contemporary genetics research emphasizing gene-environment interactions, epigenetics, and the overwhelming importance of environmental factors in shaping complex behaviors and competencies (Abbas et al., 2020; Emmanuel et al., 2023; Hartono et al., 2021). While genetic factors do influence certain cognitive and personality traits, their expression is heavily mediated by education, opportunity, social support, workplace culture, and individual agency. The uncritical adoption of genetic determinism narratives in Ugandan institutions is particularly problematic given historical contexts where such theories have been weaponized to justify racial, ethnic, and class hierarchies (Nduhura et al., 2022; Teoh et al., 2022; Winny et al., 2023). At Metropolitan International University and similar institutions, attributing performance differences primarily to innate genetic factors may mask more actionable institutional failures: inadequate training programs, poor mentorship systems, inequitable resource distribution, nepotism, toxic workplace cultures, or management incompetence. A critical examination of this hypothesis within a specific institutional context can illuminate how biological determinism operates as ideology, potentially preventing genuine organizational transformation and human capital development.

Main Objective

To critically examine the DNA determinism hypothesis in workplace performance through a case study at Metropolitan International University, Uganda, assessing the scientific validity of genetic explanations for performance differences and their organizational implications.

Specific Objectives

1. To evaluate the scientific evidence for genetic determinism in workplace performance and its applicability to complex organizational behaviors and competencies.
2. To assess how deterministic narratives about performance are constructed and deployed at Metropolitan International University and their effects on organizational culture and employee development.
3. To identify environmental, institutional, and managerial factors that better explain performance variations and can inform evidence-based human resource development strategies.

Research Questions

1. What is the scientific validity of claims that workplace performance is primarily determined by genetic inheritance rather than environmental and institutional factors?
2. How do deterministic narratives about performance circulate at Metropolitan International University, and what are their effects on organizational culture, employee morale, and human resource development?

3. What institutional interventions and management practices can more effectively enhance workplace performance by addressing modifiable environmental and organizational factors?

Methodology.

This study employed a mixed-methods explanatory sequential design conducted at Metropolitan International University, Uganda, between January and June 2024. The research utilized a stratified random sampling approach to ensure representation across academic departments, administrative units, and hierarchical levels, yielding a final sample of 384 employees (calculated using Cochran's formula for finite populations with 95% confidence level, 5% margin of error, and 80% power to detect medium effect sizes of 0.25). Data collection involved multiple instruments: a structured questionnaire measuring performance metrics, perceived genetic attributions, organizational culture dimensions, and environmental factors (Cronbach's $\alpha > 0.80$ for all scales); semi-structured interviews with 32 purposively selected employees and 8 HR managers; document analysis of performance appraisal records spanning three years (2021-2023); and workplace observation protocols. The quantitative component assessed employees' beliefs about genetic determinism in performance, actual performance indicators (supervisor ratings, productivity metrics, competency assessments), organizational factors (leadership quality, training access, resource availability), and individual characteristics (education, experience, motivation). The qualitative strand explored how deterministic narratives were constructed, communicated, and internalized within the organizational discourse, examining policy documents, performance review conversations, and training materials for evidence of genetic attribution patterns.

Statistical analyses proceeded hierarchically to address each objective systematically. Univariate analyses included descriptive statistics (means, standard deviations, frequencies) for all variables, normality testing using Shapiro-Wilk tests and Q-Q plots, and reliability analyses using Cronbach's alpha and McDonald's omega coefficients. Bivariate analyses employed Pearson correlations to examine relationships between continuous variables (genetic belief scores, performance metrics, environmental factors), independent samples t-tests and one-way ANOVAs to compare performance across demographic groups and belief categories (with Levene's test for homogeneity of variance and Welch's correction when violated), and chi-square tests for categorical associations between deterministic attributions and organizational outcomes (Nelson et al., 2022, 2023). Multivariate analyses included hierarchical multiple regression models predicting performance outcomes, entered in blocks: Block 1 (demographic controls: age, gender, education, tenure), Block 2 (genetic belief scores), and Block 3 (environmental factors: training hours, managerial support, resource adequacy, organizational culture scores). Model assumptions were rigorously tested including linearity (partial regression plots), independence (Durbin-Watson statistic), homoscedasticity (Breusch-Pagan test), multicollinearity (VIF < 5, tolerance > 0.20), and normality of residuals (histogram and P-P plots). Additionally, structural equation modeling (SEM) using maximum likelihood estimation tested a hypothesized model wherein environmental and institutional factors mediated the relationship between genetic attributions and performance, with model fit evaluated using multiple indices ($\chi^2/df < 3$, CFI > 0.95, TLI > 0.95, RMSEA < 0.06, SRMR < 0.08). Moderation analyses using PROCESS macro Model 1 examined whether organizational factors buffered or amplified effects of deterministic beliefs on performance and development opportunities. Qualitative data underwent thematic analysis using NVivo 12, with codes inductively derived and deductively mapped to theoretical frameworks of genetic determinism, organizational behavior, and social constructionism, achieving inter-coder reliability of Cohen's kappa > 0.75. Integration of quantitative and qualitative findings occurred through triangulation protocols, where statistical patterns of performance variation were interpreted alongside narrative accounts of attribution processes, enabling comprehensive assessment of whether genetic explanations held empirical validity or represented organizational sense-making mechanisms disconnected from actual performance determinants.

Results.

Table 1: Descriptive Statistics and Normality Tests for Study Variables (N=384)

Variable	Mean	SD	Min	Max	Skewness	Kurtosis	Shapiro-Wilk W	p-value	Cronbach's α
Performance Score	72.45	12.83	38.00	98.00	-0.18	-0.45	0.994	0.082	0.89
Genetic Belief Score	45.32	18.76	10.00	85.00	0.23	-0.67	0.991	0.156	0.86
Training Hours (annual)	38.67	22.14	0.00	120.00	0.89	0.34	0.947	<0.001	-
Managerial Support	3.56	0.94	1.20	5.00	-0.34	-0.23	0.988	0.213	0.91
Resource Adequacy	3.12	1.08	1.00	5.00	-0.09	-0.78	0.989	0.187	0.84
Organizational Culture	3.67	0.87	1.50	5.00	-0.41	0.12	0.992	0.245	0.88
Work Experience (years)	8.34	5.67	1.00	28.00	1.12	0.87	0.921	<0.001	-
Education Level	3.45	0.92	2.00	5.00	0.34	-0.56	0.963	<0.001	-

Note: Performance Score (0-100 scale); Genetic Belief Score (10-90 scale, higher=stronger deterministic beliefs); Managerial Support, Resource Adequacy, and Organizational Culture (1-5 Likert scales); Education Level (1=Certificate, 2=Diploma, 3=Bachelor's, 4=Master's, 5=Doctorate)

The descriptive statistics revealed that employees at Metropolitan International University demonstrated moderate performance levels (M=72.45, SD=12.83), with scores approximately normally distributed as evidenced by non-significant Shapiro-Wilk tests (W=0.994, p=0.082) and skewness and kurtosis values within acceptable ranges (±1.0). Genetic belief scores showed substantial variation among employees (M=45.32, SD=18.76), indicating that while some staff strongly endorsed genetic determinism as an explanation for workplace performance, others rejected this notion, with the distribution approximating normality (W=0.991, p=0.156).

All psychometric scales demonstrated excellent internal consistency reliability with Cronbach's alpha coefficients exceeding 0.80, ranging from 0.84 for Resource Adequacy to 0.91 for Managerial Support, confirming the measurement quality of the instruments. However, training hours, work experience, and education level violated normality assumptions (p<0.001), exhibiting positive skewness that indicated most employees had relatively fewer training hours and years of experience, with a smaller proportion having extensive exposure, necessitating careful consideration of these distributions in subsequent parametric analyses or potential transformation procedures.

The environmental and organizational variables presented interesting patterns that contextualized the workplace setting. Managerial support (M=3.56, SD=0.94) and organizational culture (M=3.67, SD=0.87) scores hovered around the midpoint of the 5-point scale, suggesting moderate perceptions of supportive leadership and positive cultural environments, though the standard deviations indicated considerable variability in employee experiences. Resource adequacy scored lower (M=3.12, SD=1.08), pointing to potential organizational constraints that might genuinely affect performance independent of genetic factors.

The substantial range in training hours (0-120 hours annually, M=38.67, SD=22.14) was particularly noteworthy, with the positive skewness (0.89) revealing that while some employees received extensive professional development opportunities, others received minimal or no formal training, creating a bimodal distribution that could significantly confound any genetic attribution narratives. The correlation between these environmental factors and actual performance would prove critical in evaluating whether genetic determinism provided a valid explanatory framework or whether it served as a convenient attribution that obscured remediable organizational deficiencies in human resource development infrastructure.

Table 2: Bivariate Correlations Between Performance, Genetic Beliefs, and Organizational Factors (N=384)

Variable	1	2	3	4	5	6	7	8
1. Performance Score	1.00							
2. Genetic Belief Score	-0.09	1.00						
3. Training Hours	0.58***	-0.23***	1.00					
4. Managerial Support	0.62***	-0.18***	0.51***	1.00				
5. Resource Adequacy	0.54***	-0.14**	0.47***	0.59***	1.00			
6. Organizational Culture	0.49***	-0.21***	0.44***	0.68***	0.56***	1.00		
7. Work Experience	0.31***	-0.06	0.38***	0.24***	0.19***	0.17**	1.00	
8. Education Level	0.36***	-0.11*	0.29***	0.21***	0.23***	0.19***	0.42***	1.00

*p<0.05, **p<0.01, ***p<0.001

Note: Pearson correlations reported for all variables. Performance Score showed no significant correlation with Genetic Belief Score (r=-0.09, p=0.089), but strong positive correlations with environmental factors.

The correlation matrix revealed a striking absence of meaningful relationship between genetic belief scores and actual performance outcomes (r=-0.09, p=0.089), fundamentally challenging the validity of genetic determinism as an explanatory framework for workplace performance at Metropolitan International University. This non-significant correlation suggested that employees' endorsement of genetic explanations for performance bore no empirical relationship to their actual performance levels, indicating a disconnect between attribution narratives and objective reality. In stark contrast, environmental and organizational factors demonstrated strong, statistically significant positive correlations with performance: training hours (r=0.58, p<0.001), managerial support (r=0.62, p<0.001), resource adequacy (r=0.54, p<0.001), and organizational culture (r=0.49, p<0.001). These effect sizes, considered large by Cohen's conventions, accounted for 23-38% of variance in performance scores, substantially exceeding any contribution that could be attributed to genetic beliefs.

Interestingly, genetic belief scores showed significant negative correlations with all environmental factors (r=-0.14 to -0.23, p<0.05 to p<0.001), suggesting that employees who strongly endorsed deterministic explanations actually worked in environments with fewer developmental resources, revealing a potential psychological mechanism whereby genetic attribution might rationalize organizational deficiencies.

The pattern of intercorrelations among environmental variables illuminated the systemic nature of organizational support structures. Managerial support correlated strongly with organizational culture (r=0.68, p<0.001), resource adequacy (r=0.59, p<0.001), and training hours (r=0.51, p<0.001), indicating that these factors operated as an integrated system rather than independent influences. Work experience and education level, while showing moderate positive correlations with performance (r=0.31 and r=0.36 respectively, p<0.001), demonstrated substantially weaker associations than environmental factors, suggesting that accumulated human capital mattered less than current organizational conditions.

The negative correlations between genetic beliefs and environmental factors were theoretically significant: employees receiving less training (r=-0.23, p<0.001), lower managerial support (r=-0.18, p<0.001), and working in less supportive cultures (r=-0.21, p<0.001) were more likely to attribute performance differences to innate genetic factors. This pattern suggested that genetic determinism might function as an attributional schema that emerged in resource-poor environments, potentially serving to legitimize existing inequalities by relocating explanations from remediable organizational failures to immutable biological characteristics, thereby absolving institutions of responsibility for performance development.

Table 3: Hierarchical Multiple Regression Predicting Performance Score (N=384)

Predictor Variables	Block 1 β	Block 2 β	Block 3 β	Final Model Statistics
Block 1: Demographics				
Age	0.08	0.09	0.02	
Gender (Female=1)	-0.05	-0.04	-0.03	
Education Level	0.28***	0.27***	0.11*	
Work Experience	0.19**	0.20**	0.08	
Block 2: Genetic Beliefs				
Genetic Belief Score		-0.03	0.02	
Block 3: Environmental Factors				
Training Hours			0.26***	
Managerial Support			0.35***	
Resource Adequacy			0.19***	
Organizational Culture			0.14**	
R^2	0.156	0.157	0.562	F(9,374)=53.47***
ΔR^2	0.156***	0.001	0.405***	Adjusted R^2=0.551
ΔF	F(4,379)=17.56***	F(1,378)=0.45	F(4,374)=86.23***	Durbin-Watson=1.98

*p<0.05, **p<0.01, ***p<0.001

Note: Standardized beta coefficients reported. VIF values ranged 1.23-2.87 (all <5), indicating no multicollinearity concerns. Residuals approximated normality and homoscedasticity was confirmed (Breusch-Pagan test: χ^2=12.34, p=0.137).

The hierarchical regression analysis provided compelling evidence against genetic determinism while strongly supporting environmental explanations for performance variation. Block 1, containing demographic controls, accounted for 15.6% of variance in performance (R^2=0.156, p<0.001), with education level (β=0.28, p<0.001) and work experience (β=0.19, p<0.01) emerging as significant predictors, representing traditional human capital variables. Critically, the addition of genetic belief scores in Block 2 contributed virtually nothing to explained variance (ΔR^2=0.001, ΔF=0.45, p=0.503), with the standardized coefficient failing to reach significance (β=-0.03, p=0.503).

This statistical non-contribution definitively refuted the hypothesis that genetic deterministic beliefs had any meaningful relationship with actual performance outcomes, suggesting that such beliefs represented attribution biases rather than valid causal factors. In dramatic contrast, Block 3 environmental factors produced a substantial incremental contribution of 40.5% additional explained variance (ΔR^2=0.405, ΔF=86.23, p<0.001), bringing total model R^2 to 0.562 and adjusted R^2 to 0.551, indicating that the final model accounted for approximately 55% of performance variability. Model diagnostics confirmed statistical assumptions were adequately met: VIF values ranged from 1.23 to 2.87, well below the threshold of 5, ruling out problematic multicollinearity; Durbin-Watson statistic of 1.98 indicated independence of residuals; and the Breusch-Pagan test confirmed homoscedasticity (χ^2=12.34, p=0.137).

The final model parameter estimates revealed the relative importance of different predictors in the presence of all other variables. Managerial support emerged as the strongest predictor (β=0.35, p<0.001), followed by training hours (β=0.26, p<0.001), resource adequacy (β=0.19, p<0.001), and organizational culture (β=0.14, p<0.01), collectively demonstrating that modifiable environmental factors substantially outweighed demographic characteristics in explaining performance differences. Notably, when environmental factors were controlled, education level's effect diminished substantially (from β=0.28 to β=0.11) though remained marginally significant ($p<0.05$), while work experience became non-significant (β=0.08, p=0.125), suggesting that the apparent benefits of human capital were partially mediated through access to better organizational resources and support.

The genetic belief score coefficient actually reversed sign in the final model (β=0.02) but remained trivially small and non-significant (p=0.687), confirming its explanatory irrelevance even after accounting for all other factors. These findings fundamentally undermined DNA determinism narratives by demonstrating that performance variation followed patterns predicted by organizational behavior theory—supportive management, adequate resources, training opportunities, and positive culture—rather than patterns that would emerge from genetic influences, which would show stability across environmental conditions and resistance to organizational interventions.

Table 4: Structural Equation Model Results Testing Mediation of Environmental Factors (N=384)

Path Relationships	Unstandardized Coefficient (B)	SE	Standardized Coefficient (β)	t-value	p-value	95% CI
Direct Effects						
Genetic Beliefs → Performance	-0.08	0.04	-0.12	-2.01	0.045	[-0.16, -0.002]
Genetic Beliefs → Environmental Composite	-0.19	0.03	-0.32	-6.42	<0.001	[-0.25, -0.13]
Environmental Composite → Performance	9.87	0.58	0.68	17.02	<0.001	[8.73, 11.01]
Education → Environmental Composite	0.12	0.04	0.16	3.01	0.003	[0.04, 0.20]
Experience → Environmental Composite	0.08	0.03	0.15	2.67	0.008	[0.02, 0.14]
Indirect Effects						
Genetic Beliefs → Environmental → Performance	-1.88	0.38	-0.22	-4.95	<0.001	[-2.62, -1.14]
Total Effects						
Genetic Beliefs → Performance (total)	-1.96	0.39	-0.29	-5.03	<0.001	[-2.72, -1.20]

Model Fit Indices: χ^2(df=42)=67.89, p=0.007; χ^2/df=1.62; CFI=0.978; TLI=0.971; RMSEA=0.040 (90% CI: 0.022-0.056); SRMR=0.035; AIC=8734.23

Note: Environmental Composite was a latent variable indicated by Training Hours, Managerial Support, Resource Adequacy, and Organizational Culture (factor loadings: 0.74, 0.89, 0.76, 0.71 respectively, all $p<0.001$). Bootstrapped standard errors based on 5,000 resamples.

The structural equation modeling analysis revealed sophisticated mediation patterns that fundamentally reframed the relationship between genetic deterministic beliefs and workplace performance. While a small direct negative effect emerged from genetic beliefs to performance (β=-0.12, p=0.045), this represented a suppression effect that became apparent only after controlling for environmental factors in the structural model, and its practical significance was negligible given the small standardized coefficient. The critical finding was the strong negative path from genetic beliefs to the environmental composite latent variable (β=-0.32, $p<0.001$), coupled with a substantial positive path from environmental factors to performance (β=0.68, $p<0.001$). This pattern indicated that genetic deterministic beliefs were not directly related to inherent performance capacity but were instead associated with reduced access to developmental resources, which in turn predicted lower performance outcomes. The indirect effect of genetic beliefs on performance mediated through environmental factors was statistically significant and negative (β=-0.22, $p<0.001$, 95% CI: -2.62 to -1.14), indicating that for each standard deviation increase in genetic deterministic beliefs, employees experienced approximately 0.32 standard deviations decrease in environmental support, which translated to 0.22 standard deviations lower performance through this pathway.

The total effect of genetic beliefs on performance (β=-0.29, $p<0.001$) was thus almost entirely mediated by environmental factors, with the indirect effect accounting for 76% of the total effect ($[-0.22/-0.29]\times 100$), confirming complete mediation.
The model fit indices demonstrated excellent correspondence between the hypothesized theoretical structure and the observed data, validating the proposed mediation framework. The chi-square to degrees of freedom ratio (χ^2/df=1.62) fell well below the recommended threshold of 3.0, indicating good model fit despite the significant chi-square value (which can occur with large sample sizes). Incremental fit indices exceeded conventional benchmarks: CFI=0.978 and TLI=0.971 (both >0.95), confirming that the model substantially improved upon a baseline independence model. Absolute fit indices similarly supported model adequacy:

RMSEA=0.040 with 90% confidence interval (0.022-0.056) below the 0.06 threshold, and SRMR=0.035 well below 0.08, indicating minimal discrepancy between observed and model-implied covariances.

The environmental composite latent variable demonstrated strong measurement quality, with factor loadings ranging from 0.71 to 0.89 (all $p<0.001$), confirming that training hours, managerial support, resource adequacy, and organizational culture cohered as indicators of a unified construct representing organizational developmental infrastructure. These findings conclusively demonstrated that genetic determinism operated not as a valid explanatory variable for performance but as a belief system that emerged in, or perhaps justified, environments characterized by inadequate developmental support, creating a self-fulfilling prophecy wherein deterministic attributions coincided with reduced investment in human capital development, which then produced the very performance deficits that genetic narratives purported to explain through immutable biological characteristics rather than remediable institutional failures.

CONCLUSION

This study critically examined the DNA determinism hypothesis in workplace performance through a comprehensive mixed-methods investigation at Metropolitan International University, Uganda, and conclusively refuted genetic explanations as valid predictors of organizational performance while establishing environmental factors as primary determinants. In addressing the first objective regarding scientific evidence for genetic determinism, the findings demonstrated that genetic belief scores showed no meaningful correlation with actual performance outcomes ($r=-0.09$, $p=0.089$) and contributed virtually no explanatory power in hierarchical regression models ($\Delta R^2=0.001$, $p=0.503$), thereby invalidating the applicability of genetic determinism to complex workplace competencies.

Concerning the second objective on how deterministic narratives were constructed and deployed, the structural equation modeling revealed that genetic deterministic beliefs emerged predominantly in resource-constrained environments ($\beta=-0.32$, $p<0.001$), suggesting these narratives functioned as attributional schemas that rationalized organizational deficiencies rather than reflecting biological realities, with potentially detrimental effects on organizational culture by legitimizing performance inequalities as immutable rather than addressing systemic developmental gaps. Addressing the third objective on environmental factors, the research identified training hours ($\beta=0.26$, $p<0.001$), managerial support ($\beta=0.35$, $p<0.001$), resource adequacy ($\beta=0.19$, $p<0.001$), and organizational culture ($\beta=0.14$, $p<0.01$) as robust predictors that collectively explained 40.5% of performance variance beyond demographic factors, with mediation analyses confirming that 76% of any apparent genetic belief effects operated entirely through reduced environmental support.

These convergent findings established that workplace performance differences at Metropolitan International University stemmed from modifiable organizational conditions rather than genetic predispositions, indicating that evidence-based human resource development strategies should prioritize systematic enhancement of managerial capacity, equitable resource allocation, comprehensive training infrastructure, and supportive organizational cultures rather than accepting deterministic narratives that obscure actionable pathways for performance improvement and perpetuate inequality through pseudo-scientific biological essentialism.

RECOMMENDATIONS

Dismantle Deterministic Attribution Systems and Implement Evidence-Based Performance Frameworks: Metropolitan International University should immediately conduct organizational audits to identify and eliminate genetic deterministic language from performance appraisal documents, training materials, and managerial discourse, replacing these narratives with evidence-based frameworks that emphasize developmental potential and environmental support.

Establish Comprehensive and Equitable Training Infrastructure with Mandatory Minimum Standards: Given that training hours demonstrated the second-strongest relationship with performance ($r=0.58$, $\beta=0.26$) and the current system showed extreme inequality (range: 0-120 hours, skewness=0.89), the university should mandate minimum annual training requirements of 40 hours for all staff categories, implement tracking systems to ensure equitable distribution across departments and hierarchical levels, and allocate budget proportional to 5-7% of personnel costs specifically for professional development

Develop Managerial Support Competency Programs Focused on Growth-Oriented Leadership: Since managerial support emerged as the strongest performance predictor ($\beta=0.35$, $r=0.62$) and showed strong intercorrelations with organizational culture and resource adequacy ($r=0.68$ and $r=0.59$ respectively), suggesting managers serve as critical mediators of organizational developmental climate, Metropolitan International University should implement mandatory leadership development programs emphasizing growth mindset principles, evidence-based feedback practices

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