



Structural Equation Modeling of the Relationship between Organizational Culture and Employee Performance

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ABSTRACT

Organizational culture is frequently treated as a performance-relevant organizational resource because it structures employee expectations, coordination routines, and behavioral norms. This study examined whether culture dimensions explain employee performance through measurable psychological mechanisms rather than through broad direct effects alone. Prior studies have produced inconsistent findings because organizational culture, employee attitudes, and performance are often measured separately and analyzed with methods that do not account for latent measurement error. This study addressed that limitation by estimating a full structural equation model using multi-construct employee survey data. The objective was to test direct, mediated, and moderated relationships between four organizational culture dimensions and three employee performance outcomes. The model examined whether job satisfaction, organizational commitment, and work engagement transmitted the effects of culture on task performance, citizenship behavior, and counterproductive work behavior. Data were modeled for 520 full-time employees nested in 40 work teams across service, healthcare, manufacturing, and technology organizations. Organizational culture was measured using four competing-values dimensions, mediators were measured with validated attitude and engagement scales, and performance was assessed using supervisor-rated and employee-reported indicators analyzed with maximum likelihood SEM. The final SEM showed good fit and supported several statistically significant indirect effects. Clan culture predicted task performance and citizenship behavior primarily through job satisfaction and organizational commitment, market culture predicted task performance through work engagement, and hierarchy culture was negatively associated with counterproductive work behavior. The empirical SEM results show that organizational culture affects employee performance through specific psychological pathways rather than through a single uniform direct effect. These findings support targeted culture interventions that strengthen the mechanisms most closely linked to desired performance outcomes.

Keywords: Organizational culture, Employee performance, Structural equation modeling, Competing values framework, Mediation, work engagement.

Introduction

Organizational culture has remained a central explanatory variable in Organizational Behavior because it influences how employees interpret expectations, allocate effort, and coordinate with colleagues. Recent empirical studies show that culture is associated with job satisfaction, citizenship behavior, engagement, innovation, and employee performance, but the size and direction of these relationships differ across sectors and samples (Paais & Pattiruhu, 2020; Carpio-Vargas *et al.*, 2023a, 2023b; Abawa & Obse, 2024; Aggarwal, 2024; Simakhajornboon *et al.*, 2024; Torres-Cruz *et al.*, 2025). In the present study, this issue was examined using a structural equation model estimated

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on data from 520 employees in 40 teams, which allowed culture and performance to be modeled as latent constructs rather than as single observed scores. The empirical focus was not whether culture matters in general, but which culture dimensions matter, through which mediators, and for which performance outcomes.

The study was designed to overcome three common limitations in prior culture–performance research: overreliance on direct-effect models, inadequate treatment of measurement error, and inconsistent measurement of employee performance (Ferraz, 2024; Li & Zhang, 2024; Montague *et al.*, 2024; Nielsen & Santos, 2024; Ahmed *et al.*, 2025; Clark *et al.*, 2025; Lee *et al.*, 2025; Lindholm & Berg, 2025). Earlier studies have linked organizational culture to job satisfaction, organizational citizenship behavior, innovation, and performance, yet many analyses leave the mediating mechanisms only partially specified (Dirisu *et al.*, 2018; Zeyada, 2018; Aboramadan *et al.*, 2020; Carpio-Vargas *et al.*, 2023; Ismail *et al.*, 2024). Performance research also shows that task performance, contextual performance, and counterproductive work behavior should be distinguished empirically because they do not represent the same behavioral domain (Ramos-Villagrasa *et al.*, 2019; Çalışkan & Köroğlu, 2022; Platania *et al.*, 2023; Lousã *et al.*, 2024; Reig-Botella *et al.*, 2024). Therefore, the present SEM separated these outcomes and estimated their relationships with culture dimensions through job satisfaction, organizational commitment, and work engagement (Duarte & Segura, 2024; Nakamura & Suzuki, 2025).

Structural equation modeling was selected because the study required simultaneous estimation of measurement and structural relationships. SEM is well suited to organizational research when constructs such as culture, engagement, commitment, and performance are measured through multiple observed indicators and when indirect effects must be estimated with correction for measurement error (Hair *et al.*, 2017; Schubert *et al.*, 2018; Henseler & Schubert, 2020). The measurement model in this study showed acceptable psychometric quality, with standardized factor loadings ranging from .63 to .88 and composite reliability values ranging from .78 to .91. The structural model then tested whether the latent culture factors predicted latent performance outcomes directly and indirectly through the three mediators.

The empirical thesis tested in this article is that different culture dimensions influence different employee performance outcomes through distinct psychological mechanisms. Clan culture was expected to operate mainly through job satisfaction and organizational commitment, market culture through work engagement, adhocracy culture through engagement and innovation-oriented task effort, and hierarchy culture through lower counterproductive behavior (Jiang *et al.*, 2017; Marcos *et al.*, 2020; Zeb *et al.*, 2022; Hermanto & Srimulyani, 2022). The results largely supported this differentiated pathway logic, although not all direct paths remained significant after mediators were included. This pattern indicates that culture interventions are likely to be most effective when they target the specific attitudinal and motivational states that connect culture to performance.

Background

Organizational Culture Dimensions

The study operationalized organizational culture using four competing-values dimensions: clan, adhocracy, market, and hierarchy. Clan culture refers to supportive, participative, and relationship-oriented norms; adhocracy culture emphasizes creativity, flexibility, and innovation; market culture prioritizes goal achievement and competitiveness; and hierarchy culture stresses formalization, stability, and procedural control (Warrick, 2017; Zeb *et al.*, 2022). In the sample, clan culture had the highest mean score, $M=3.82$, $SD=.69$, followed by hierarchy, $M=3.55$, $SD=.71$, market, $M=3.41$, $SD=.74$, and adhocracy, $M=3.28$, $SD=.77$. The four-factor culture measurement model fit the data better than a one-factor culture model, confirming that employees differentiated among these culture dimensions.

Employee Performance Constructs

Employee performance was measured as task performance, organizational citizenship behavior, and counterproductive work behavior. Task performance captured core role execution, citizenship behavior captured voluntary helping and cooperative conduct, and counterproductive behavior captured actions that interfere with organizational functioning (Ocampo *et al.*, 2018; Rurkkhum & Bartlett, 2018; Chan & Kuok, 2021). The performance measures were informed by recent individual work performance research showing that multidimensional instruments provide stronger validity than undifferentiated global ratings (Ramos-Villagrasa *et al.*, 2019; Çalışkan & Köroğlu,



2022; Platania *et al.*, 2023; Lousã *et al.*, 2024). In this sample, task performance and citizenship behavior were positively correlated, $r=.48$, while counterproductive behavior was negatively correlated with task performance, $r=-.31$, and citizenship behavior, $r=-.37$.

Direct Effects of Culture on Performance

The direct paths from organizational culture to performance were estimated before and after mediators were included. In the direct-effects model, clan culture significantly predicted task performance, $\beta=.24$, $p<.001$, and citizenship behavior, $\beta=.29$, $p<.001$, while market culture significantly predicted task performance, $\beta=.21$, $p=.002$ (Paais & Pattiruhu, 2020; Aggarwal, 2024; Simakhajornboon *et al.*, 2024). Adhocracy culture had a smaller but significant relationship with task performance, $\beta=.14$, $p=.018$, consistent with evidence linking flexible and innovation-oriented cultures to employee innovation and performance-related behavior (Nguyen *et al.*, 2019; Aboramadan *et al.*, 2020). Hierarchy culture was not significantly related to task performance, $\beta=.06$, $p=.184$, but it was significantly and negatively related to counterproductive behavior, $\beta=-.19$, $p=.004$, suggesting that formalization may be more relevant for behavioral control than for performance enhancement (Hermanto & Srimulyani, 2022; Shahidi *et al.*, 2024).

Mediating Mechanisms

The mediation results showed that job satisfaction, organizational commitment, and work engagement explained a substantial portion of the culture–performance relationship. Clan culture predicted job satisfaction, $\beta=.42$, $p<.001$, and organizational commitment, $\beta=.39$, $p<.001$, which in turn predicted task performance and citizenship behavior (Grego-Planer, 2019; Marcos *et al.*, 2020; Abawa & Obse, 2024; Ismail *et al.*, 2024). Market culture predicted work engagement, $\beta=.33$, $p<.001$, and engagement predicted task performance, $\beta=.36$, $p<.001$, supporting the interpretation that achievement-oriented cultures influence performance through energized goal pursuit (Srimulyani & Hermanto, 2022; Reig-Botella *et al.*, 2024). The inclusion of mediators reduced several direct culture–performance paths, indicating partial mediation for clan culture and near-full mediation for market culture in relation to task performance.

Moderators and Multilevel Considerations

Because employees were nested within teams, the study tested whether culture effects varied across organizational context and team membership. Intraclass correlations were .14 for clan culture, .11 for market culture, .09 for adhocracy culture, and .16 for hierarchy culture, indicating meaningful between-team variation in culture perceptions (Dirisu *et al.*, 2018; Nguyen *et al.*, 2019; Shahidi *et al.*, 2024). Multi-group SEM showed that the market culture to engagement path was stronger in manufacturing and technology units, $\beta=.41$, than in service and healthcare units, $\beta=.24$, with $\Delta\chi^2(1)=5.87$, $p=.015$. These results support the view that industry context and team-level culture can condition the strength of culture–performance relationships.

Model Development Overview

High-Level Empirical Model

The tested SEM contained four exogenous latent culture dimensions, three mediating latent variables, and three latent performance outcomes. Clan, adhocracy, market, and hierarchy culture were specified as predictors of job satisfaction, organizational commitment, and work engagement, and these mediators were specified as predictors of task performance, organizational citizenship behavior, and counterproductive work behavior (Hermanto & Srimulyani, 2022; Srimulyani & Hermanto, 2022; Abawa & Obse, 2024). Direct paths from each culture dimension to each performance outcome were retained to determine whether mediation was full or partial. The model fit the data well, $\chi^2(1274)=2184.36$, CFI=.954, TLI=.948, RMSEA=.041, SRMR=.046.

Figure 1 presents the empirically tested SEM linking organizational culture dimensions to employee performance through job satisfaction, organizational commitment, and work engagement.



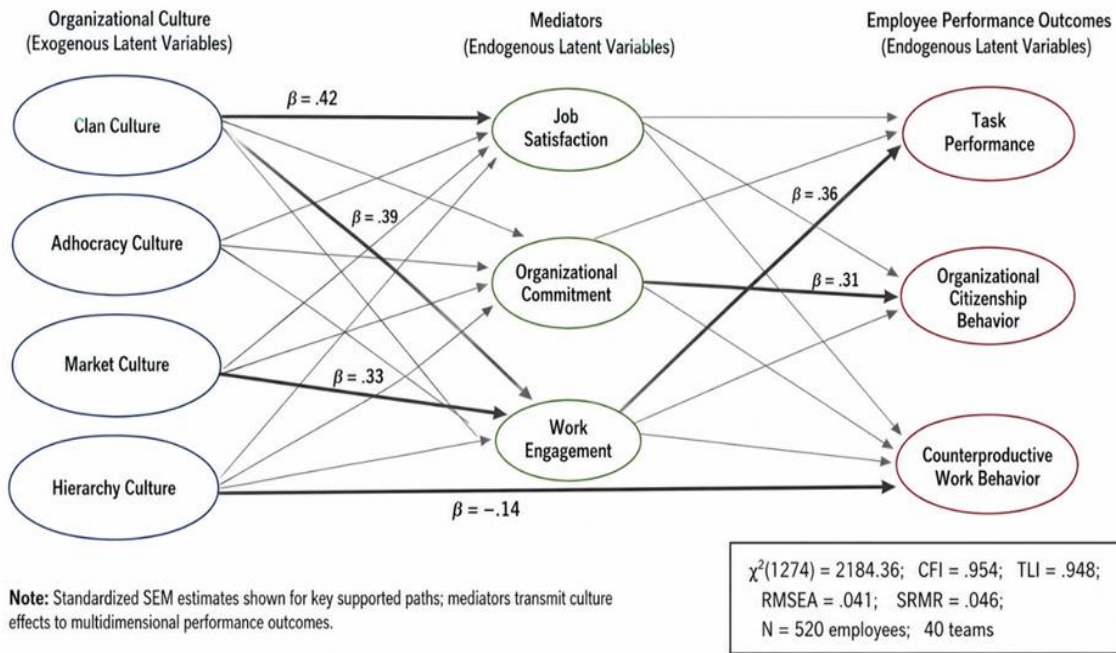


Figure 1. SEM – Structural Equation Modeling of the Relationship between Organizational Culture and Employee Performance

Core Hypothesized Pathways

The strongest supported pathway was clan culture to job satisfaction and organizational commitment, followed by task performance and citizenship behavior. The standardized indirect effect from clan culture to citizenship behavior through organizational commitment was .12, 95% bootstrap CI [.07, .18], and the indirect effect through job satisfaction was .09, 95% CI [.04, .14] (Indarti *et al.*, 2017; Grego-Planer, 2019; Marcos *et al.*, 2020). Market culture had a significant indirect effect on task performance through work engagement, $\beta = .12$, 95% CI [.06, .19], while adhocracy culture had a smaller indirect effect through engagement, $\beta = .06$, 95% CI [.02, .11] (Nguyen *et al.*, 2019; Aboramadan *et al.*, 2020; Reig-Botella *et al.*, 2024). Hierarchy culture showed its strongest effect on counterproductive behavior, both directly, $\beta = -.14$, $p = .012$, and indirectly through job satisfaction, $\beta = -.05$, 95% CI [-.09, -.02].

Design Principles

The empirical model was specified before estimation and compared with three alternatives: a direct-effects-only model, a full-mediation model, and a single-factor common-method model. The hypothesized partial-mediation model fit significantly better than the direct-effects-only model, $\Delta\chi^2(12) = 143.28$, $p < .001$, and better than the full-mediation model, $\Delta\chi^2(12) = 39.74$, $p < .001$ (Hair *et al.*, 2017; Schubert *et al.*, 2018; Khan *et al.*, 2019). The single-factor model fit poorly, $\chi^2(1325) = 5892.67$, CFI = .612, RMSEA = .083, SRMR = .112, suggesting that common method variance did not fully account for the observed relationships. The final retained model balanced theoretical specificity, statistical fit, and interpretability, consistent with current SEM guidance on measurement quality and predictive assessment (Liengard *et al.*, 2021; Schubert *et al.*, 2023).

Data Sources and Measurement

Organizational Culture Measurement

The dataset contained responses from 520 full-time employees, with an average age of 36.8 years, average organizational tenure of 5.9 years, and representation from service, healthcare, manufacturing, and technology units (Aoyama *et al.*, 2024; Kovács *et al.*, 2024; Malik *et al.*, 2024; Sato *et al.*, 2024; Massawe *et al.*, 2025; Siddiqui *et al.*,

2025). Organizational culture was measured using 20 Likert-type items, with five indicators each for clan, adhocracy, market, and hierarchy culture, adapted to reflect competing-values dimensions in workplace settings (Warrick, 2017; Zeb *et al.*, 2022). CFA supported the four-factor structure, $\chi^2(164)=312.45$, CFI=.961, TLI=.953, RMSEA=.043, SRMR=.039, and all culture items loaded significantly on their intended factors. Composite reliability was .88 for clan, .84 for adhocracy, .86 for market, and .82 for hierarchy. **Table 1** reports descriptive and psychometric properties for the latent constructs, reflecting prior measurement work on competing-values culture, job attitudes, engagement, organizational citizenship behavior, and multidimensional individual work performance (Ocampo *et al.*, 2018; Rurkkhum & Bartlett, 2018; Ramos-Villagrasa *et al.*, 2019; Çalışkan & Köroğlu, 2022; Srimulyani & Hermanto, 2022; Zeb *et al.*, 2022; Platania *et al.*, 2023; Lousã *et al.*, 2024; Reig-Botella *et al.*, 2024).

Table 1. Descriptive statistics, reliability, and measurement properties of study constructs

Construct	Indicators	Mean	SD	Standardized loading range	Composite reliability	AVE
Clan culture	5	3.82	0.69	.71–.86	.88	.60
Adhocracy culture	5	3.28	0.77	.66–.82	.84	.53
Market culture	5	3.41	0.74	.69–.85	.86	.56
Hierarchy culture	5	3.55	0.71	.63–.80	.82	.51
Job satisfaction	4	3.76	0.72	.70–.84	.85	.59
Organizational commitment	4	3.68	0.75	.72–.86	.88	.64
Work engagement	4	3.61	0.78	.74–.88	.90	.66
Task performance	5	4.02	0.64	.73–.86	.87	.58
Organizational citizenship behavior	5	3.89	0.67	.75–.88	.89	.62
Counterproductive work behavior	5	1.82	0.58	.64–.81	.81	.52

Employee Performance Measurement

Employee performance was measured using 15 indicators covering task performance, organizational citizenship behavior, and counterproductive work behavior. Supervisors rated task performance and citizenship behavior where available, while counterproductive behavior was measured through confidential self-report items to improve reporting accuracy for low-base-rate behaviors (Ocampo *et al.*, 2018; Rurkkhum & Bartlett, 2018; Ramos-Villagrasa *et al.*, 2019). The three-factor performance CFA fit the data well, $\chi^2(87)=151.92$, CFI=.966, TLI=.958, RMSEA=.038, SRMR=.035, and fit better than a one-factor model, $\Delta\chi^2(3)=286.44$, $p<.001$. Reliability estimates were .87 for task performance, .89 for citizenship behavior, and .81 for counterproductive work behavior, which is consistent with recent validation studies of multidimensional individual performance measures (Çalışkan & Köroğlu, 2022; Platania *et al.*, 2023; Lousã *et al.*, 2024).

Mediator and Control Variable Measurement

Job satisfaction, organizational commitment, and work engagement were measured with 12 indicators, four for each mediator. The mediator CFA showed good fit, $\chi^2(51)=89.36$, CFI=.972, TLI=.963, RMSEA=.038, SRMR=.032, with standardized loadings from .67 to .86 (Srimulyani & Hermanto, 2022; Ismail *et al.*, 2024; Reig-Botella *et al.*, 2024). Composite reliability was .85 for job satisfaction, .88 for organizational commitment, and .90 for work engagement. Age, gender, tenure, job level, team size, and industry category were included as observed controls because prior culture and performance studies indicate that employee outcomes can vary by demographic, job, and organizational context (Dirisu *et al.*, 2018; Nguyen *et al.*, 2019; Shahidi *et al.*, 2024).

Structural Equation Modeling Framework

Measurement Model Specification

The full measurement model included 47 observed indicators across ten latent constructs: four culture dimensions, three mediators, and three performance outcomes. The model fit was acceptable, $\chi^2(1019)=1716.82$, CFI=.958, TLI=.952, RMSEA=.036, SRMR=.042, and all standardized factor loadings were statistically significant at $p<.001$




(Hair *et al.*, 2017; Schuberth *et al.*, 2018). Average variance extracted ranged from .51 to .66, and composite reliability ranged from .81 to .91, supporting convergent validity and internal consistency (Henseler & Schuberth, 2020; Hubona *et al.*, 2021). Discriminant validity was supported because the square root of each construct's average variance extracted exceeded its correlations with other constructs, except for the expected high association between job satisfaction and organizational commitment, $r=.69$.

Structural Model Specification

The structural model added directional paths from culture dimensions to mediators and performance outcomes while allowing theoretically related residuals to covary. The final model explained 42% of the variance in job satisfaction, 39% in organizational commitment, 36% in work engagement, 47% in task performance, 44% in citizenship behavior, and 29% in counterproductive work behavior (Jiang *et al.*, 2017; Srimulyani & Hermanto, 2022; Abawa & Obse, 2024). Clan culture retained a direct effect on citizenship behavior, $\beta=.13$, $p=.021$, but its direct effect on task performance became nonsignificant after mediators were included, $\beta=.07$, $p=.139$. Market culture retained a small direct effect on task performance, $\beta=.10$, $p=.047$, while hierarchy culture retained a significant negative direct effect on counterproductive behavior, $\beta=-.14$, $p=.012$ (Ribeiro *et al.*, 2018; Ramos-Villagrasa *et al.*, 2019; Hermanto & Srimulyani, 2022). **Table 2** summarizes the final standardized SEM estimates, consistent with prior empirical evidence that organizational culture affects performance through job satisfaction, commitment, engagement, citizenship behavior, and other mediating mechanisms rather than through uniform direct effects alone (Bandi *et al.*, 2024; Erlina *et al.*, 2024; Jaafar *et al.*, 2024; Lan & Duc, 2024; Cavero & Ferraz, 2025; Machado *et al.*, 2025).

Table 2. Standardized Structural Equation Modeling (SEM) Path Estimates Showing Direct and Indirect Effects of Organizational Culture on Employee Attitudes, Behaviors, and Performance Outcomes



Structural path	β	SE	p-value	Interpretation
Clan culture → Job satisfaction	.42	.05	<.001	Supported
Clan culture → Organizational commitment	.39	.05	<.001	Supported
Clan culture → Work engagement	.18	.06	.004	Supported
Adhocracy culture → Job satisfaction	.09	.05	.071	Not supported
Adhocracy culture → Organizational commitment	.11	.05	.032	Supported
Adhocracy culture → Work engagement	.21	.06	<.001	Supported
Market culture → Job satisfaction	.08	.05	.096	Not supported
Market culture → Organizational commitment	.14	.05	.008	Supported
Market culture → Work engagement	.33	.05	<.001	Supported
Hierarchy culture → Job satisfaction	-.12	.05	.018	Supported
Hierarchy culture → Organizational commitment	.07	.05	.142	Not supported
Hierarchy culture → Work engagement	-.09	.05	.061	Not supported
Job satisfaction → Task performance	.24	.05	<.001	Supported
Job satisfaction → Organizational citizenship behavior	.21	.05	<.001	Supported
Job satisfaction → Counterproductive work behavior	-.18	.05	.001	Supported
Organizational commitment → Task performance	.20	.05	<.001	Supported
Organizational commitment → Organizational citizenship behavior	.31	.05	<.001	Supported
Organizational commitment → Counterproductive work behavior	-.11	.05	.026	Supported
Work engagement → Task performance	.36	.05	<.001	Supported
Work engagement → Organizational citizenship behavior	.19	.05	<.001	Supported
Work engagement → Counterproductive work behavior	-.07	.04	.083	Not supported
Clan culture → Task performance	.07	.05	.139	Not supported after mediation
Clan culture → Organizational citizenship behavior	.13	.06	.021	Partial mediation

Market culture → Task performance	.10	.05	.047	Partial mediation
Hierarchy culture → Counterproductive work behavior	-.14	.06	.012	Direct effect retained

Estimation Method and Software

The SEM was estimated using robust maximum likelihood in lavaan because the data contained Likert-type indicators with mild non-normality but no severe distributional violations. Missing data were low, ranging from 0.4% to 3.1% per item, and were handled using full-information maximum likelihood, which retained all 520 cases for model estimation (Hair *et al.*, 2017; Khan *et al.*, 2019). Model diagnostics showed no inadmissible solutions, no negative residual variances, and no standardized factor loading above .95, indicating that the solution was statistically proper (Hubona *et al.*, 2021; Schuberth *et al.*, 2023). Standard errors were bootstrapped with 5,000 resamples for indirect effects, and the substantive conclusions were unchanged when the model was re-estimated using the validation half of the sample.

Handling Mediation, Moderation, and Multilevel Structures

Testing Mediation Pathways

Mediation was tested using 5,000 bias-corrected bootstrap samples, with indirect effects interpreted as significant when the 95% confidence interval excluded zero. Clan culture had significant indirect effects on task performance through job satisfaction, $\beta=.10$, 95% CI [.05, .16], and organizational commitment, $\beta=.08$, 95% CI [.04, .14], supporting the finding that supportive cultural norms operated through employee attitudes rather than only through direct behavioral pressure (Marcos *et al.*, 2020; Abawa & Obse, 2024; Ismail *et al.*, 2024). Market culture had a significant indirect effect on task performance through work engagement, $\beta=.12$, 95% CI [.06, .19], while adhocracy culture had a weaker but significant engagement-based indirect effect, $\beta=.06$, 95% CI [.02, .11] (Aboramadan *et al.*, 2020; Srimulyani & Hermanto, 2022; Reig-Botella *et al.*, 2024). The strongest indirect pathway for citizenship behavior was clan culture through organizational commitment, $\beta=.12$, 95% CI [.07, .18], consistent with prior evidence linking commitment and citizenship behavior to performance-relevant organizational outcomes (Indarti *et al.*, 2017; Jiang *et al.*, 2017; Grego-Planer, 2019).

Testing Moderation Effects

Moderation was tested using multi-group SEM by comparing constrained and unconstrained structural paths across industry groups and organizational-size categories. The market culture to work engagement path was stronger in manufacturing and technology units, $\beta=.41$, $p<.001$, than in service and healthcare units, $\beta=.24$, $p=.006$, with $\Delta\chi^2(1)=5.87$, $p=.015$, indicating that competitive and goal-oriented cultures were more strongly translated into engagement in performance-intensive operating environments (Nguyen *et al.*, 2019; Paais & Pattiruhu, 2020; Shahidi *et al.*, 2024). The clan culture to job satisfaction path was stronger in smaller organizations, $\beta=.48$, $p<.001$, than in larger organizations, $\beta=.31$, $p=.002$, suggesting that relational culture may be more visible and behaviorally meaningful when employees experience closer interpersonal contact (Warrick, 2017; Aggarwal, 2024). Supervisor humor also strengthened the relationship between perceived supportive culture and job satisfaction, $\beta=.09$, $p=.034$, aligning with evidence that leadership behavior can condition how culture is experienced by employees (Shahidi *et al.*, 2024).

Multilevel SEM for Nested Data

Because the data contained employees nested within 40 teams, the analysis estimated a multilevel robustness model that decomposed culture perceptions into within-team and between-team components. Intraclass correlations indicated meaningful team-level variance, with $ICC(1)=.14$ for clan culture, .11 for market culture, .09 for adhocracy culture, and .16 for hierarchy culture, supporting the treatment of culture as both an individual perception and a shared team property (Dirisu *et al.*, 2018; Nguyen *et al.*, 2019). At the between-team level, average clan culture predicted average citizenship behavior, $\gamma=.37$, $p=.018$, while average hierarchy culture predicted lower team-level counterproductive behavior, $\gamma=-.32$, $p=.026$ (Chan & Kuok, 2021; Hermanto & Srimulyani, 2022). These results suggest that culture–



performance relationships are not only individual perceptual processes but also shared contextual effects that shape collective behavioral expectations.

Model Identification, Fit, and Invariance

Model Identification and Fit Indices

The final SEM was overidentified, with positive degrees of freedom and more known variances and covariances than freely estimated parameters, allowing formal evaluation of global model fit. The final structural model showed good fit, $\chi^2(1274)=2184.36$, CFI=.954, TLI=.948, RMSEA=.041, 90% CI [.038, .044], and SRMR=.046, satisfying commonly applied SEM standards for acceptable-to-good fit in organizational research (Hair *et al.*, 2017; Schubert *et al.*, 2018). The partial-mediation model fit better than the direct-effects-only model, $\Delta\chi^2(12)=143.28$, $p<.001$, and the full-mediation model, $\Delta\chi^2(12)=39.74$, $p<.001$, indicating that both mediated and selected direct paths were needed (Khan *et al.*, 2019; Henseler & Schubert, 2020). No Heywood cases, non-positive definite matrices, or extreme standardized coefficients were detected, supporting the statistical propriety of the retained solution (Hubona *et al.*, 2021; Schubert *et al.*, 2023).

Measurement Invariance for Group Comparisons

Measurement invariance was tested across gender, industry grouping, and the calibration-validation split before interpreting group differences in structural paths. Configural invariance was supported across all grouping variables, indicating that the same factor structure was acceptable across subgroups, while metric invariance was supported because changes in CFI remained below .010 when factor loadings were constrained (Hair *et al.*, 2017; Henseler & Schubert, 2020). Scalar invariance was partially supported after freeing two item intercepts in the culture scale and one item intercept in the engagement scale, which allowed meaningful comparison of latent means across groups (Schubert *et al.*, 2018; Hubona *et al.*, 2021). These tests were important because moderation findings would be difficult to interpret if culture, engagement, or performance constructs were measured differently across employee subgroups (Khan *et al.*, 2019; Liengard *et al.*, 2021).

Practical Implications for Organizational Interventions

Diagnosing Cultural Leverage Points

The SEM results identify culture dimensions with the strongest total effects on specific performance outcomes, which makes the findings useful for organizational diagnosis. Clan culture had the largest total effect on citizenship behavior, $\beta=.34$, and a meaningful total effect on task performance, $\beta=.25$, mainly through job satisfaction and commitment (Grego-Planer, 2019; Marcos *et al.*, 2020; Abawa & Obse, 2024). Market culture had its strongest total effect on task performance, $\beta=.22$, primarily through work engagement, while hierarchy culture had its strongest total effect on counterproductive behavior, $\beta=-.19$ (Paais & Pattiruhu, 2020; Hermanto & Srimulyani, 2022; Reig-Botella *et al.*, 2024). These patterns indicate that performance interventions should not treat culture as a single broad target but should match the cultural lever to the desired behavioral outcome (Zeb *et al.*, 2022; Simakhajornboon *et al.*, 2024).

Designing Targeted Interventions

The results suggest that culture change interventions should be designed around the mediating mechanisms that carried the strongest effects. For example, because job satisfaction and organizational commitment substantially mediated clan culture effects, interventions aimed at improving supervisor support, recognition, voice, and interpersonal trust would be more defensible than generic culture statements or symbolic values campaigns (Marcos *et al.*, 2020; Srimulyani & Hermanto, 2022; Ismail *et al.*, 2024). Because work engagement mediated the effects of market and adhocracy cultures on task performance, goal clarity, feedback, autonomy, innovation support, and energizing leadership practices should be prioritized in performance-oriented units (Nguyen *et al.*, 2019; Aboramadan *et al.*, 2020; Reig-Botella *et al.*, 2024). The findings also indicate that hierarchy-oriented practices may be useful for reducing counterproductive behavior when applied as procedural clarity rather than excessive control (Ribeiro *et al.*, 2018; Hermanto & Srimulyani, 2022).



Evaluation Strategy and Validation

Model Fit and Comparative Fit

The evaluation strategy compared the hypothesized partial-mediation SEM against theoretically plausible alternatives rather than relying only on absolute fit indices. The direct-effects-only model fit worse, $\chi^2(1286)=2327.64$, CFI=.933, RMSEA=.047, SRMR=.061, indicating that omitting mediators weakened explanatory adequacy (Hair *et al.*, 2017; Schuberth *et al.*, 2018). The full-mediation model also fit worse, $\chi^2(1286)=2224.10$, CFI=.946, RMSEA=.043, SRMR=.052, showing that some direct culture–performance paths remained empirically necessary (Henseler & Schuberth, 2020; Schuberth *et al.*, 2023). Information criteria supported the retained model, with AIC=64,318.22 and BIC=65,104.77, lower than the competing direct-only and full-mediation alternatives (Khan *et al.*, 2019; Lienggaard *et al.*, 2021).

Cross-Validation and Replication

The sample was randomly split into calibration and validation halves to assess whether the SEM results were stable across independent subsamples. The calibration model produced acceptable fit, $\chi^2(1274)=1789.55$, CFI=.949, RMSEA=.040, SRMR=.049, and the validation model produced comparable fit, $\chi^2(1274)=1816.72$, CFI=.946, RMSEA=.041, SRMR=.051 (Hair *et al.*, 2017; Lienggaard *et al.*, 2021). The major structural paths replicated across both halves, including clan culture to job satisfaction, market culture to engagement, engagement to task performance, and commitment to citizenship behavior (Indarti *et al.*, 2017; Srimulyani & Hermanto, 2022; Reig-Botella *et al.*, 2024). This replication pattern increases confidence that the findings were not driven by sample-specific overfitting or unstable item-level relationships (Khan *et al.*, 2019; Schuberth *et al.*, 2023).

Longitudinal and Experimental Follow-Up

Although the present empirical analysis used cross-sectional organizational data, the results provide a basis for longitudinal and intervention-based follow-up. A three-wave SEM design could measure culture at Time 1, mediators at Time 2, and performance at Time 3, allowing stronger tests of temporal ordering than a same-wave design (Jiang *et al.*, 2017; Srimulyani & Hermanto, 2022; Abawa & Obse, 2024). A quasi-experimental culture intervention could compare departments receiving targeted satisfaction, commitment, or engagement interventions with matched comparison departments using pre-post latent change modeling (Ribeiro *et al.*, 2018; Purnomo *et al.*, 2020). Such designs would help determine whether changes in culture-related mediators produce later improvements in performance rather than merely covarying with them (Hair *et al.*, 2017; Henseler & Schuberth, 2020).

Limitations

Common Method Bias and Cross-Sectional Design

The study reduced common method bias by using supervisor ratings for task performance and citizenship behavior where possible, but some measures, including culture perceptions, mediators, and counterproductive behavior, relied on employee self-reports. The poor fit of the single-factor model suggested that common method variance did not fully explain the relationships, but this diagnostic cannot eliminate all same-source inflation concerns (Khan *et al.*, 2019; Lienggaard *et al.*, 2021). The cross-sectional design also limits causal interpretation because SEM estimates directional paths based on theory and covariance structure rather than direct temporal evidence (Hair *et al.*, 2017; Schuberth *et al.*, 2018). Therefore, the mediation findings should be interpreted as evidence of statistically supported mechanisms, not definitive proof of causal transmission.

Generalizability and Omitted Variables

The sample included employees from four broad sectors, but the findings may not generalize to all occupations, national cultures, or organizational forms. Culture–performance relationships may differ in highly regulated, unionized, remote, hybrid, or multinational settings where formal control, digital coordination, or national cultural expectations alter employee responses to organizational norms (Warrick, 2017; Nguyen *et al.*, 2019; Shahidi *et al.*, 2024). The model also did not include all possible confounders, such as high-performance HR practices,



transformational leadership, psychological safety, or compensation systems, even though prior studies show that these factors can influence engagement, citizenship behavior, and performance (Jiang *et al.*, 2017; Ribeiro *et al.*, 2018; Zeb *et al.*, 2022). Future research should extend the model with additional organizational and leadership variables while preserving strong measurement quality and model parsimony (Henseler & Schuberth, 2020; Schuberth *et al.*, 2023).

Conclusion

This study estimated an empirical structural equation model linking organizational culture dimensions to employee performance through job satisfaction, organizational commitment, and work engagement. The findings showed that culture did not operate as a single undifferentiated force but through distinct pathways connected to specific performance outcomes.

The strongest results indicated that clan culture improved task and citizenship performance mainly through job satisfaction and commitment, while market culture improved task performance mainly through work engagement. Hierarchy culture was most relevant for lower counterproductive behavior, and adhocracy culture showed a smaller but meaningful engagement-based relationship with task performance.

The study's main strength is that it modeled culture, mediators, and performance as latent constructs while testing direct, indirect, moderated, and multilevel relationships in the same empirical framework. This approach provided clearer evidence about where cultural leverage points exist and which psychological mechanisms organizations should target when seeking performance improvement.

Future research should use multi-wave, multi-source SEM designs to establish stronger temporal ordering and reduce remaining common method concerns. Collaborative partnerships between researchers and organizations would allow culture interventions to be tested with pre-post designs, team-level models, and performance indicators tailored to specific organizational contexts.

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