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Synergetic Paradigm of Organizational Culture and Structure on Employee Development and Retention in Nigeria's Oil and Gas Industry

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Abstract

In this exploratory study we examine the roles of organizational culture (OC) and organizational structure (OS) in shaping employee development (ED) and employee retention (ER) within the Nigerian oil and gas sector. Drawing on survey data from 145 employees, we analyze the direct effects of OC and OS, their interaction, and the mediating roles of job satisfaction (JS) and employee engagement (EE). The findings indicate that OC is the primary driver of ED and significantly influences EE and JS, whereas OS plays a more limited role, primarily affecting JS. Contrary to theoretical expectations, no evidence supports a synergistic interaction between culture and structure, even after controlling for multicollinearity. Further, neither culture nor structure directly predicts ER. Instead, EE emerges as the only meaningful pathway linking organizational conditions to retention outcomes. The results suggest that employee outcomes are shaped less by structural alignment and more by psychological mechanisms, particularly engagement and sense of belonging (SB). These findings highlight the limitations of relying solely on internal organizational systems to explain retention and underscore the importance of integrating organizational, psychological, and external labor market factors. The study contributes to the literature in that we challenge assumptions of culture–structure synergy and reposition psychological experiences as the central drivers of employee outcomes in high-mobility, skill-intensive contexts.

Keywords: organizational culture, organizational structure, employee development, employee retention, job satisfaction, employee engagement, Nigeria, oil and gas sector

1. Introduction

Sustainable performance in volatile, knowledge-intensive environments depends not only on financial or technological resources but also on organizations' ability to attract, develop, and retain skilled employees, a challenge evident in the Nigerian oil and gas sector (Belanger et al., 2024). Rising labor-market mobility and declining employee commitment have intensified turnover costs and widened skills gaps, shifting organizational attention toward internal conditions that shape employee experience and long-term attachment. Although organizational culture and structure apply across industries, this study focuses on the oil and gas industry in Nigeria due to its reliance on specialized skills and persistent retention challenges. The sector's knowledge-intensive and demanding nature makes it a relevant context for examining how organizational structure and culture influence employee development and retention. In Nigeria, the Nigerian National Petroleum Company Limited, for example, adjusted the compensation of approximately 6,280 employees to align with global benchmarks and retain critical talent (Nayak et al., 2021; Oparada, 2025). More broadly, employee development (ED) and employee retention (ER) have emerged as central strategic priorities, particularly in industries characterized by rapid technological change, high operational risk, and intense global competition (Belanger et al., 2024; Chatzoudes & Chatzoglou, 2022). Increasingly complex employee expectations, however, have reduced the effectiveness of standardized retention strategies, creating the need for more integrated and intentional organizational approaches (Nayak et al., 2021).

In this discourse, researchers commonly observe organizational culture (OC) and organizational structure (OS) as the key factors that determine how employees behave, develop, and remain in the firm (Fraihat et al., 2023; Nasaireh et al., 2019). OC reflects shared values, beliefs, and norms. These shape how employees interpret organizational expectations and experience their work environment (Basar et al., 2022; Mohsen et al., 2020), whereas OS denotes the formal configuration of roles, authority, communication flows, and decision-making processes that govern organizational functioning (Fraihat et al., 2023; Sandhu & Kulik, 2019). Although analytically distinct, OC and OS operate interdependently. Their alignment determines how effectively strategic intent translates into employee experiences. Alignment reinforces consistent behavioral expectations and enhances organizational performance, whereas misalignment generates tension, weakens commitment, and undermines ED and ER (Nasaireh et al., 2019).

Empirical studies published between 2019 and 2025 consistently showed that OC emphasizing inclusiveness, psychological safety, and continuous learning fostered positive employee experiences, thereby strengthening motivation and organizational attachment (Krentz et al., 2021; Savage, 2023). OS was associated with job satisfaction, creativity, and commitment, particularly when structural arrangements promoted autonomy, role clarity, and effective communication (Nosike et al., 2021; Odumusor & Emmanuel, 2024; Woyengo et al.,

2019). Despite these findings, the literature remains fragmented. Most researchers examined OC and OS independently, with culture-focused researchers emphasizing engagement or commitment and structure-oriented studies' authors prioritizing efficiency, creativity, or knowledge management outcomes (Farooq, 2023; Fraihat et al., 2023). As a result, scholars have paid limited attention to their combined effects on ED and ER or to how alignment between cultural and structural systems shapes these outcomes (Farooq, 2023; Nayak et al., 2021; Singh, 2019).

OC and OS ultimately serve a shared purpose: fostering employee satisfaction while enabling sustained organizational productivity. Alignment between these dimensions creates a coherent environment that supports learning, engagement, and continuous ED (Mohsen et al., 2020). In this study we investigate the synergistic relationship between OC and OS in shaping ED and ER by examining the underlying mechanisms through which these dimensions operate. Three research questions guide the study: (1) What is the synergetic relationship between OC and OS on ED and ER? (2) What are the specific mechanisms through which OC and OS contribute to ER? (3) What are the specific mechanisms through which OC and OS contribute to ED?

2. Literature Review and Hypotheses

2.1 OC: Employee Experience, Development, and Retention

OC constitutes a central social system that facilitates employee perceptions, behaviors, and long-term attachment in organizations. It encompasses shared values, beliefs, assumptions, and normative expectations that guide how employees interpret organizational priorities and enact their roles (Basar et al., 2022; Mohsen et al., 2020). A strong OC fosters meaning, sense of belonging (SB), and value alignment by enhancing job satisfaction (JS), commitment, and sustained organizational attachment. Attention to OC extends beyond theoretical interest and represents a critical managerial concern for maintaining human capital advantage (Sylejmani & Mesko, 2024).

OC plays an influential role in ED, especially in contexts that demand continuous learning and adaptability. Learning-oriented cultures encourage experimentation, knowledge sharing, and reflective practice, which strengthen employees' skills and long-term employability (Lin & Huang, 2021; Novrianto et al., 2025). Laubengaier et al. (2025) emphasized that both formal and informal learning processes embedded within OC sustained developmental momentum beyond episodic training interventions. By signaling organizational investment in employee growth, such cultures strengthened employees' willingness to remain with the organization. Cultures characterized by fairness, recognition, and developmental support reinforced affective commitment and career optimism, while enhancing ER (Pathan, 2023; Sylejmani & Mesko, 2024). These cultural attributes are salient in industries with high external labor mobility, such as oil and gas, where employees possess transferable skills and considerable bargaining power (Anodi et al., 2025). As stated by Chizoba and Okechukwu (2025), ER is further affected by external dynamics, including labor market trends,

competitive pressures within the industry, and regulatory environments. In sectors such as oil and gas, where the demand for specialized skills frequently exceeds available talent, employees often have access to alternative opportunities that provide more attractive compensation or improved working conditions.

Empirical evidence consistently supported the positive association between OC and key employee outcomes. Researchers positively related inclusive, learning-oriented, and supportive cultures to employee satisfaction, engagement, and commitment (Bishop, 2020; Cahyono, 2025; Lin & Huang, 2021; Mohsen et al., 2020). Krentz et al. (2021) and Savage (2023) linked learning and inclusivity to psychological safety, defining it as a shared belief that interpersonal risk-taking is acceptable within the workplace. Psychologically safe cultures enable employees to voice ideas, acknowledge mistakes, and challenge existing practices without fear of negative consequences, thereby supporting learning and engagement.

Therefore, we propose the following hypotheses:

H1: OC positively relates to ED, particularly in the Nigerian oil and gas sector.

H2: OC positively relates to ER in the Nigerian oil and gas sector.

2.2 OS: Employee Experience, Development, and Retention

OS refers to the formal configuration of roles, authority, communication channels, and decision-making processes used to coordinate organizational activities. Core structural dimensions, including centralization, formalization, departmentalization, and communication flow, directly influence employee creativity, JS, and commitment (Fraihat et al., 2023; Odumusor & Emmanuel, 2024). By shaping employees' perceptions of autonomy, role clarity, and access to resources, OS affects learning opportunities and long-term organizational attachment (Fraihat et al., 2023; Sandhu & Kulik, 2019). Authors of past studies, therefore, emphasized the role of OS in attracting, engaging, and retaining employees through its influence on decision-making autonomy, coordination mechanisms, and development opportunities (Nosike et al., 2021; Odumusor & Emmanuel, 2024).

Beyond role design and coordination, OS shaped how knowledge was created, shared, and retained, thus influencing ED and ER outcomes (Farooq, 2023). Organizational routines such as mentoring, documentation, job rotation, and empowerment contributed to the development of human and social capital while institutionalizing clear pathways for learning and capability development (Al-Tit, 2022; Novrianto et al., 2025).

Prior studies further indicated that flexible and decentralized structures were positively associated with JS, creativity, and employee engagement (EE). Woyengo et al. (2019) demonstrated that decentralized structures enhanced employee commitment by increasing involvement and perceived control over work processes. These findings highlighted the role of OS in enabling employees to apply, expand, and refine their skills over time. At the same time, OS contributes to retention by providing predictability, role clarity, and procedural

fairness. Moderate levels of formalization reduced role ambiguity and work-related stress and were associated with higher JS and organizational trust (Fraihat et al., 2023; Nosike et al., 2021). When structural systems were perceived as fair and transparent, employees were more likely to view the organization as a stable platform for long-term career development. Collectively, these findings underscore the importance of OS in sustaining both employee capability and workforce continuity.

Therefore, we propose the following hypotheses:

H3: OS positively relates to ED in the Nigerian oil and gas sector.

H4: OS positively relates to ER in the Nigerian oil and gas sector.

2.3 Synergetic Interaction Between OC and OS

Although in the past researchers have traditionally examined OC and OS as distinct constructs, those undertaking recent theoretical and empirical research increasingly emphasize their interdependence. Contingency theorists posit that organizational effectiveness depends on the alignment among internal systems rather than on isolated design features (Mark & Erude, 2023). Similarly, socio-technical systems theorists maintain that social subsystems, such as culture, and technical subsystems, such as structure, must be jointly optimized to achieve sustainable performance and employee well-being (Raza et al., 2021a, 2021b). Systems theorists further conceptualize organizations as holistic entities composed of interdependent subsystems, including people, technology, processes, culture, and structure. Within this framework, culture and structure function as interconnected social and technical elements that must remain aligned with environmental demands to support organizational continuity and growth (Piyu, 2019).

Evidence from Maruti Suzuki shows that a culture emphasizing employee involvement, continuous learning, and supportive management improves retention when reinforced through structured training and career development pathways (Jeya Rani, 2025). By embedding cultural values into formal HR systems, the organization creates a synergistic environment in which employee aspirations align with organizational processes, strengthening commitment and reducing turnover (Jeya Rani, 2025). In contrast, misalignment or weak synergy undermines the employee experience, erodes credibility, and increases turnover intentions (Koohborfardhaghighi et al., 2022). In this context, synergy is the mutually reinforcing interaction between culture and structure that yields outcomes greater than either could achieve alone (Dhingra & Gupta, 2023). Culture legitimizes structural practices, whereas structure institutionalizes cultural values (Janićijević, 2021). Cultural orientations emphasizing empowerment, learning, and collaboration are most effective when supported by structural arrangements that decentralize decision-making, enable cross-functional interaction, and facilitate information flow (Shamsuddin et al., 2023). When such synergy exists, employees receive coherent organizational signals that reduce ambiguity, enhance trust, and strengthen psychological attachment.

Knowledge and learning play a critical role in how OC and OS jointly shape ED and ER. According to Farooq (2023), knowledge constitutes a strategic organizational resource, and its creation, sharing, and retention depend heavily on both cultural norms and structural configurations. Structural arrangements shape interaction patterns and information flows, whereas cultural contexts influence employees' willingness to share and apply knowledge. Together, these elements form learning environments that support skill development and mitigate the risks associated with employee turnover and knowledge loss. According to Nayak et al. (2021), the deliberate governance of employee knowledge, commonly conceptualized as the knowledge contract, has emerged as a key mechanism for aligning individual contributions with organizational objectives. When employees perceive that their knowledge is valued, integrated, and effectively utilized, satisfaction and retention intentions increase significantly (Nayak et al., 2021). Nayak et al. (2021) also emphasized that both knowledge contracts and psychological contracts jointly influenced these outcomes. Psychological contracts reflect employees' expectations of future returns, including compensation, development opportunities, and career advancement. As a result of reaching the expectation level, the employee commitment and emotional attachment to the organization are strengthened (Jakada et al., 2024). Psychological contracts further complement knowledge contracts by shaping employees' perceptions of reciprocity and obligation within the employment relationship. When organizations fulfill these implicit expectations regarding learning opportunities and support, employees respond with higher levels of engagement, JS, and organizational commitment (Topa et al., 2022).

Empirical studies demonstrate that aligned cultural and structural systems enhance empowerment, engagement, and adaptability, particularly in knowledge-intensive and project-based contexts (Raza et al., 2021a, 2021b; Shamsuddin et al., 2023). This interactive perspective advances the literature by underscoring the systemic nature of organizational design and highlighting that alignment is not static but continuously constructed through communication, leadership practices, and EE. However, the effectiveness of culture–structure synergy may be contingent on contextual conditions such as regulatory intensity, hierarchy, and institutional rigidity, particularly in highly regulated sectors.

Therefore, we propose the following hypotheses:

H5: The interaction between OC and OS positively influences ED, particularly in the Nigerian oil and gas sector.

H6: The interaction between OC and OS positively influences ER, particularly in the Nigerian oil and gas sector.

2.4 Mechanisms Linking Culture–Structure Synergy to ER

Researchers understand ER as a function of employees' affective and cognitive evaluations of their organizational environment. It encompasses the policies, practices, and conditions that encourage employees to remain with an organization by reducing voluntary turnover driven by dissatisfaction, limited growth opportunities, perceived inequity, or weak organizational

support (Singh, 2019). Within this framework, JS, EE and SB are central mechanisms supporting culture–structure synergy influences on retention outcomes.

In this study, we consider JS in relation to both retention and development. With respect to retention, satisfaction denotes the extent to which expectations regarding rewards, work conditions, recognition, and fairness are met, reducing withdrawal behaviors and reinforcing organizational commitment (Biason, 2020; Murtiningsih, 2020). EE likewise operates across retention and development. In retention terms, engagement reflects initiative, adaptability, and persistence, fostering dedication and reducing the attractiveness of external opportunities (Anodi et al., 2025; Fidyah & Setiawati, 2019; Mohammed, 2025; Soegiarto et al., 2024). Satisfaction reflects employees' overall evaluation of their work experience, whereas engagement captures the depth of emotional and cognitive investment in work roles (Biason, 2020; Mohammed, 2025). According to Sylejmani and Mesko (2024), a strong SB operates as a key driver of employee retention. When individuals feel that their contributions and well-being are recognized and valued, they are more inclined to remain committed to the workplace. This perception of inclusion strengthens emotional attachment and deepens organizational commitment, ultimately reducing turnover intentions. Employees who experience this level of connection are significantly more likely to stay, underscoring belonging as a central driver of retention behavior. Together, JS, EE and SB shape expectations and experiences at work, forming the basis of the psychological contract that governs perceptions of fairness, reciprocity, and long-term employment relationships (Nayak et al., 2021). Culture–structure alignment and synergy fulfill expectations for fairness, growth, recognition, and involvement, ultimately strengthening satisfaction, commitment, and intent to stay (Biason, 2020; Chatzoudes & Chatzoglou, 2022; Murtiningsih, 2020).

Synergistic cultural and structural systems enhance satisfaction by creating supportive, fair, and empowering work environments (Chatzoudes & Chatzoglou, 2022). When organizations reinforce values of respect and development through enabling structures, employees are more likely to experience fulfillment and stability. Singh (2019) and Murtiningsih (2020) further highlighted that employees are more likely to remain with organizations that invest in their development. Such investments signal long-term commitment and reinforce the knowledge contract, which employees reciprocate with loyalty and sustained performance.

Therefore, we propose the following hypothesis:

H7: JS, EE and SB mediate the relationship between OC–OS alignment and ER in the Nigerian oil and gas industry.

2.5 Mechanisms Linking Culture–Structure Synergy to ED

ED refers to a deliberate and continuous organizational process whereby employees' skills, knowledge, autonomy, and career capabilities are enhanced in alignment with organizational objectives. Beyond formal training initiatives, development encompasses mentoring, coaching, job rotation, participation in decision-making, and experiential learning, all of which strengthen individual competence. Contemporary scholarship has emphasized that

development outcomes are shaped less by isolated training interventions and more by the broader organizational context in which learning occurs (Al-Tit, 2022; PeopleHum, n.d.). JS, EE and SB function as central mechanisms linking culture–structure synergy to developmental outcomes, mirroring their previously established role in shaping retention.

According to Singh (2019), JS arises when organizations provide opportunities for growth, career progression, and skill enhancement through structured career paths, training programs, mentorship, and fair appraisal systems. These practices reinforce the psychological contract by signaling reciprocity and long-term organizational commitment. Satisfaction reflects not only the fulfillment of immediate expectations but also confidence in the organization's investment in employees' future potential. EE is likewise strengthened when individuals experience autonomy, voice, leadership support, and continuous learning opportunities. Developmental investments such as knowledge sharing, effective communication, and succession planning reinforce the implicit knowledge contract, encouraging loyalty, sustained performance, and authentic participation (Murtiningsih, 2020; Singh, 2019). Whereas satisfaction increases employees' willingness to invest effort in developmental activities, engagement sustains persistence and commitment throughout the learning process, ensuring that developmental initiatives yield long-term organizational benefits (Laubengaier et al., 2025). SB functions as a key driver of ED because employees who feel respected, accepted, and integrated into the organizational community are more motivated to pursue learning, seek feedback, and engage in developmental activities (Weisman et al., 2023). This sense of psychological safety enhances their willingness to take on new challenges, collaborate with colleagues, and invest in skill-building efforts, thereby fostering continuous employee development and long-term professional advancement (Maria et al., 2024).

ED is most effective when structural systems reinforce learning-oriented cultural values, embedding learning within everyday work activities (Bishop, 2020; Laubengaier et al., 2025). Such alignment encourages employees to seek feedback, experiment with new approaches, and assume responsibility for their own growth. Thus, as a result it can strengthen engagement and facilitate the practical application of newly acquired skills (Chatzoudes & Chatzoglou, 2022; Novrianto et al., 2025; Soegiarto et al., 2024). Supportive cultures enhance motivation to learn and innovate, whereas flexible structural arrangements expand opportunities for knowledge application, mentoring, and cross-functional exposure (Lin & Huang, 2021; Soegiarto et al., 2024). These conditions also reinforce psychological and knowledge contracts by signaling organizational commitment to employee growth and valuing employees' knowledge contributions. Psychological safety plays a central role in this process because it enables experimentation, risk-taking, and learning from failure, which are essential for sustaining growth mindsets, continuous learning cultures, and long-term ED (Krentz et al., 2021; Novrianto et al., 2025; Savage, 2023).

Therefore, we propose the following hypothesis:

H8: JS, EE and SB mediate the relationship between OC–OS alignment and ED in the Nigerian oil and gas industry.

3. Method

3.1 Research Design

In this study we adopt a quantitative, cross-sectional research design to examine how OC and OS, independently and in combination, influence ED and ER outcomes within Nigeria's oil and gas industry. We further evaluate the mediating roles of JS and EE in explaining these relationships.

Given the exploratory and predictive orientation of the research, particularly the inclusion of interaction effects and multiple mediating pathways, we employ a variance-based structural equation modeling (SEM) approach using partial least squares structural equation modeling (PLS-SEM). This method is appropriate for analyzing complex models with moderate sample sizes and for research contexts characterized by evolving theoretical foundations (Hair et al., 2019).

3.2 Measurement and Instrumentation

We measured all study constructs using established scales that we adapted to reflect the operational and cultural realities of the Nigerian oil and gas industry. We assessed OC and OS using multiple reflective indicators that captured employees' perceptions of leadership involvement, communication quality, autonomy, alignment, and structural flexibility. These scales demonstrated acceptable internal consistency in the present study for OC ($\alpha = 0.872$) and for OS ($\alpha = 0.713$). Measuring these constructs with multi-item indicators ensured broad conceptual coverage that aligns with prior organizational behavior research. We assessed the OC using an adapted version of the Denison Organizational Culture Survey, which is known

We measured ED with items in which we assessed access to training, mentoring, feedback, and general developmental opportunities. This scale showed strong reliability ($\alpha = 0.879$). We measured ER, JS, EE, and SB using global assessment items. Consistent with prior research, JS, EE, SB, and ER were measured using single-item global indicators. Such measures are appropriate for unidimensional constructs that reflect holistic employee evaluations and have been widely validated in organizational behavior research, particularly when survey brevity is essential. Although single-item indicators limit the assessment of internal consistency, they effectively capture overall perceptions while reducing response burden and are considered acceptable within exploratory PLS-SEM models for perceptually salient outcome constructs (We provide details of all scale adaptations in the appendix (Table A4)).

The original dataset included items with different response formats such as implementation scales, effectiveness scales, and frequency-based scales. To ensure comparability across indicators, we harmonized all responses into a single 5-point Likert scale ranging from

"strongly disagree" (1) to "strongly agree" (5). This harmonization involved reducing distinctions between formats and assuming conceptual equivalence across scale types. Although this resulted in some loss of specificity, it allowed for consistent scoring across constructs and ensured compatibility with variance-based SEM.

This measurement strategy combined validated instruments, contextual adaptation, and systematic preprocessing to produce reliable and analytically coherent constructs. The resulting measurement model aligns with the study's theoretical foundations and meets the statistical requirements for PLS-SEM analysis.

3.3 Data and Sample

We collected data from 150 employees through a structured online questionnaire administered to individuals currently working in the sector. We employed a stratified random sampling procedure to ensure representation across junior staff, middle management, and senior executive levels to capture diverse perspectives on organizational practices and employee experiences. We anonymized all responses to ensure confidentiality and subsequently prepared for SEM. We conducted data collection for this cross-sectional study between January and March 2026, reflecting contemporary organizational practices within the oil and gas sector. This period captures current workforce dynamics characterized by high labor mobility, evolving employee expectations, and an increased emphasis on knowledge retention, safety compliance, and continuous ED. Participation was voluntary and anonymous, and we restricted responses to individuals with current industry employment to ensure contextual relevance.

Of the total of 150 responses obtained, we retained 145 after data cleaning and screening procedures. The sample size exceeds recommended thresholds for PLS-SEM, ensuring adequate statistical power for estimating both direct and interaction effects. The use of bootstrap estimation (5,000 resamples) further enhances the robustness of the inference despite moderate sample size. The majority of the respondents belonged to middle management positions (62.5%), followed by floor-level management (31.2%) and top management roles (6.2%). In terms of industry experience, 54.2% reported 2–5 years of experience, 20.8% reported more than 10 years, 16.7% reported 6–10 years, and 8.3% reported less than 2 years. Nearly half of the respondents worked in integrated organizations operating across multiple segments of the oil and gas value chain (47.9%), while others were employed in upstream (22.9%), midstream (16.7%), and downstream (12.5%) operations. Regarding organizational size, half of the participants were employed in large enterprises, followed by medium-sized (33.3%), small (14.6%), and micro enterprises (2.1%). Most respondents perceived their organizations' culture and structure as at least moderately aligned, with 60.4% reporting average alignment and 31.2% reporting excellent alignment. Only 8.3% perceived poor alignment. Overall, the sample reflected a managerial and experienced workforce drawn largely from medium to large organizations, providing an appropriate foundation for examining the proposed structural relationships.

3.4 Data Analysis Methods

We analyzed data using variance-based SEM, specifically the PLS-SEM technique using the R (lavaan). This technique is well suited for models that incorporate multiple mediators, interaction terms, and composite constructs. We selected this method because it performs reliably with moderate sample sizes and data that do not fully meet normality assumptions (Hair et al., 2019). It also provided a more robust alternative to covariance-based SEM, which in earlier analyses showed sensitivity to multicollinearity and produced unstable estimates. The analytical process began with preparing the dataset by converting all responses into numeric Likert values and computing composite scores for the reflective constructs.

Preliminary diagnostics revealed substantial multicollinearity between OC and OS. To address this while preserving the theoretical distinction between the constructs, we created the interaction term using an orthogonalization procedure. This approach removed shared variance between the predictors and the interaction term, allowing interaction effects to be estimated independently and without distortion. We conducted model estimation using the seminr package in R, and significance testing relied on a bootstrapping procedure with 5,000 resamples to generate standard errors, t-statistics, and confidence intervals (Hair et al., 2022).

The analysis proceeded with an assessment of indicator reliability, internal consistency, and discriminant validity to confirm the adequacy of the measurement model. Once we had established measurement quality, we evaluated the structural model through an examination of path coefficients, significance levels, effect sizes, and the explained variance associated with each endogenous construct. This approach enabled a comprehensive evaluation of direct, indirect, and interaction effects and provided a clear understanding of how OC, OS, and psychological mechanisms contribute to ED and ER.

Overall, the analytical strategy offered a rigorous and appropriate method for testing the study's theoretically driven model and for exploring the complex relationships among organizational conditions and employee outcomes within the Nigerian oil and gas industry.

3.5 Reliability and Validity Assessment

We assessed the reliability and validity of the measurement model before estimating the structural paths, following recommended PLS-SEM procedures. We confirmed internal consistency reliability through Cronbach's alpha, rhoA, and composite reliability, all of which exceeded the 0.70 threshold for the multi-item constructs. As expected, the single-item constructs produced fixed values of 1.00, reflecting the limitations of reliability estimation for single-indicator measures (We provide more details of Cronbach's alpha, rhoA, and composite reliability in the appendix (Table A1)).

We established convergent validity through average variance extracted, with all multi-item constructs exceeding the recommended minimum of 0.50. Although the interaction construct reported a lower average variance extracted, this is typical for interaction terms in PLS-SEM and does not affect interpretation of the model. We examined discriminant validity using the

Fornell–Larcker criterion and the heterotrait–monotrait ratio (HTMT) ratio. Most constructs met the required standards, although the relationship between OC and OS exceeded the HTMT threshold, indicating substantial conceptual overlap. This finding aligns with prior research showing that employees often perceive cultural norms and structural practices as closely linked. Despite this overlap, we retained both constructs due to their theoretical relevance. Overall, the measurement model demonstrates strong reliability, adequate convergent validity, and acceptable discriminant validity, providing a sound basis for interpreting the structural relationships in the study (We provide more details of average variance extracted, Fornell–Larcker criterion and HTMT in the appendix (Table A1-A3)).

4. Results

4.1 Descriptive Statistics and Correlation Analysis

We present descriptive statistics and Pearson correlation coefficients for all study constructs in Tables 1 and 2. The results indicate that respondents generally reported moderately high perceptions across all constructs. SB recorded the highest mean (M = 4.05, SD = 0.88), followed by EE (M = 3.94, SD = 0.96) and OS (M = 3.86, SD = 0.88). OC (M = 3.81, SD = 0.96) and JS (M = 3.79, SD = 1.14) also exhibited relatively high mean scores, while ED showed slightly lower but still positive perceptions (M = 3.65, SD = 0.88). ER recorded the lowest mean (M = 3.50, SD = 0.76), suggesting comparatively weaker perceptions regarding employees' intention to remain with the organization.

Assessment of distributional properties indicates that skewness values ranged from −0.74 to 0.25 and kurtosis values ranged from −0.57 to 0.22, all of which fall within commonly accepted thresholds (±1). Most constructs exhibited slight negative skewness, indicating a tendency for respondents to select higher agreement categories. Employee retention was the only construct with a small positive skew, suggesting greater variability in retention perceptions. Overall, the data demonstrate acceptable distributional characteristics for subsequent multivariate analysis using PLS-SEM, which does not require strict normality.

Table 1. Descriptive Statistics of Study Variables

Variable	N	Mean (M)	SD	Min	Max	Skewness	Kurtosis
OC	145	3.81	0.96	1.00	5.00	-0.74	-0.25
OS	145	3.86	0.88	1.00	5.00	-0.74	0.22
ED	145	3.65	0.88	1.12	5.00	-0.61	-0.35
JS	145	3.79	1.14	1.00	5.00	-0.69	-0.57
EE	145	3.94	0.96	1.00	5.00	-0.72	-0.19
SB	145	4.05	0.88	2.00	5.00	-0.71	-0.16
ER	145	3.50	0.76	2.00	5.00	0.25	-0.37

Note. *OC = Organizational Culture; OS = Organizational Structure; ED = Employee Development; JS = Job Satisfaction; EE = Employee Engagement; SB = Sense of Belonging; ER = Employee Retention.*

The correlation matrix in Table 2 shows that OC and OS are strongly and positively correlated (r = .84), indicating substantial overlap between the two constructs. Both OC and OS demonstrated moderate to strong positive relationships with JS (r = .65 and r = .67, respectively), suggesting that both cultural and structural factors are important determinants of employee satisfaction. ED was moderately associated with OC (r = .56), OS (r = .52), and JS (r = .51), supporting the expectation that development outcomes are influenced by organizational context and employee attitudes. EE and SB also showed positive, albeit weaker, relationships with other constructs, indicating their complementary roles in shaping employee experiences.

In contrast, ER exhibited consistently weak correlations with all other variables (ranging from −.04 to .16), suggesting that retention may be influenced by additional factors not captured in the present model. Notably, the strong correlation between OC and OS highlights the potential for multicollinearity, thereby justifying the use of orthogonalization in the structural model to isolate their independent effects.

Table 2. Correlation Matrix

Variable	OC	OS	ED	JS	EE	SB	ER
OC	1.00						
OS	0.84	1.00					
ED	0.56	0.52	1.00				
JS	0.65	0.67	0.51	1.00			
EE	0.46	0.37	0.30	0.45	1.00		
SB	0.33	0.35	0.38	0.35	0.31	1.00	
ER	0.09	0.02	0.06	0.03	0.16	-0.04	1.00

Note. *We report correlations below the diagonal.*

4.2 Structural Model Results and Hypothesis Testing

The structural model results provide a nuanced understanding of the relationships among OC, OS, and employee outcomes within the proposed framework. The analysis of direct effects indicates that OC exerts a statistically significant influence on several key outcomes. Specifically, OC positively predicts JS (β = 0.254, p = 0.029), EE (β = 0.483, p = 0.001), and ED (β = 0.369, p = 0.006), with the strongest effect observed on engagement. OS also demonstrates a significant positive effect on JS (β = 0.463, p < 0.001), suggesting that structural mechanisms primarily shape employees' evaluative perceptions of their work environment. Additionally, EE significantly predicts ER (β = 0.175, p = 0.039), while SB significantly predicts ED (β = 0.178, p = 0.033).

In contrast, the results did not support several hypothesized relationships. OC does not significantly influence ER (β = 0.160, p = 0.280), and OS does not significantly predict ED (β = 0.086, p = 0.542) or ER (β = -0.089, p = 0.479). Further, JS does not significantly predict ED (β = 0.180, p = 0.112) or ER (β = -0.054, p = 0.703). These findings suggest that neither culture nor structure directly drives retention outcomes and that JS alone does not translate into measurable behavioral outcomes within this context.

The analysis of interaction effects further indicates that the results do not support hypothesized synergy between OC and structure. The interaction term does not significantly predict ED (β = -0.059, p = 0.789) or ER (β = -0.124, p = 0.641). Importantly, these results remain consistent after orthogonalization, confirming that the absence of a significant interaction effect is not attributable to multicollinearity but reflects a substantive empirical finding. This suggests that culture and structure operate as parallel influences rather than as mutually reinforcing components within the model.

Despite the lack of direct and interaction effects on retention, the mediation results highlight the importance of psychological mechanisms in translating organizational context into employee outcomes. EE emerges as a significant predictor of retention (β = 0.175, p = 0.039), while SB significantly predicts ED (β = 0.178, p = 0.033). These findings indicate that internal psychological states function as critical pathways through which organizational factors exert influence. Overall, the results suggest that although OC and OS shape employee perceptions and experiences, their effects on development and retention are largely indirect and contingent upon their ability to foster engagement and belonging within the organization.

Table 3. Summary of Hypothesis Results

Hypothesis	Path	Result
H1	OC → ED	Supported
H2	OC → ER	Not Supported
H3	OS → ED	Not Supported
H4	OS → ER	Not Supported
H5	OC x OS → ED	Not Supported
H6	OC x OS → ER	Not Supported
H7	Mediation → ER	Partially Supported
H8	Mediation → ED	Supported

The structural model path diagram (Figure 1) illustrates the standardized path coefficients and R^2 values for endogenous constructs. Solid lines represent hypothesized relationships, and we display coefficients alongside each path. We present R^2 values within endogenous variables. Analysis of the SEM path diagram illustrates a model in which OC emerges as a more consistent predictor of employee outcomes compared to OS. Though structure plays a critical role in shaping JS, its broader influence appears limited. The absence of significant interaction effects suggests that culture and structure operate largely as independent drivers rather than synergistic components within this context. Further, the relatively low R^2 value for ER indicates that external or unmeasured variables, such as labor market conditions, compensation, or individual career preferences, may influence retention decisions.

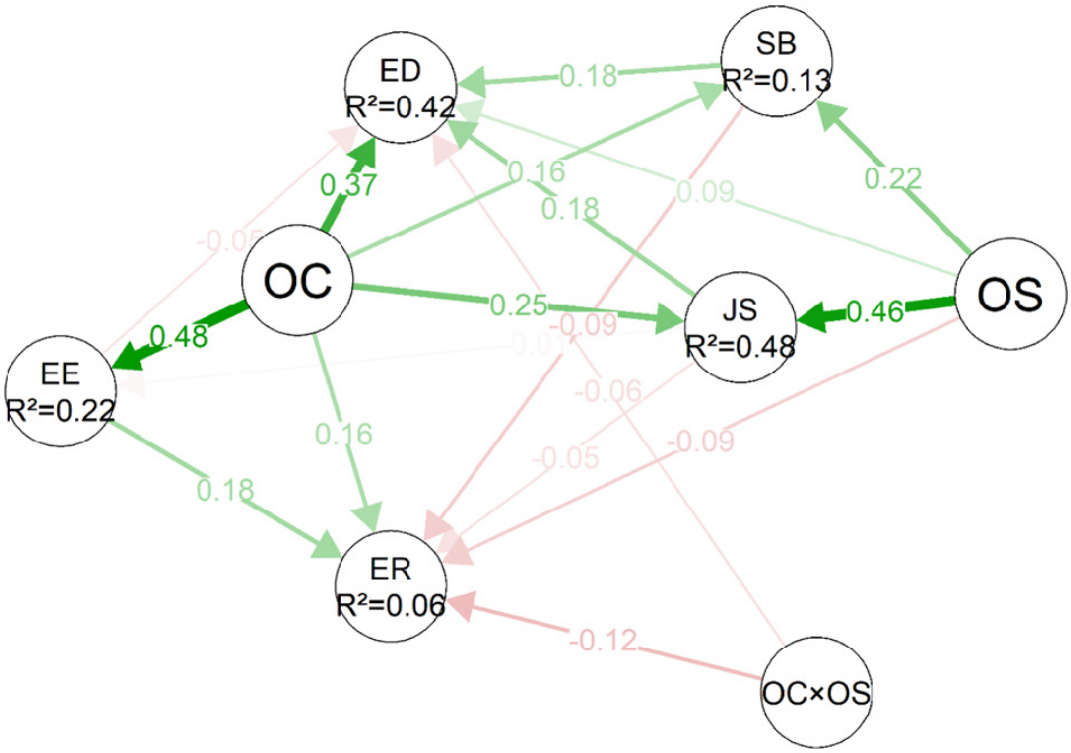

Figure 1. SEM Results

4.3 Explained Variance

We assessed the explanatory power of the model using R^2 values for each endogenous construct, as summarized in Table 4.

Table 4. Explained Variance of Endogenous Variables

Construct	R^2	Interpretation
ED	0.39	Moderate explanatory power
ER	0.07	Weak explanatory power
JS	~0.46	Strong
EE	~0.17	Moderate
SB	~0.10	Weak

The model explains a substantial portion of variance in ED but performs poorly in explaining retention.

5. Discussion and Conclusion

5.1 Theoretical Contributions

In this study we examined the joint influence of OC and OS on ED and ER. Contrary to dominant theoretical expectations, the findings provide no empirical support for a synergistic interaction between the two constructs. Even after addressing multicollinearity, the absence of an interaction effect suggests that the lack of synergy reflects a substantive pattern rather than a methodological limitation.

These results challenge alignment-based perspectives, including contingency theory and socio-technical systems theory, which emphasize the benefits of internal consistency (Mark & Erude, 2023; Raza et al., 2021a, 2021b). Instead, the findings support emerging arguments that organizational elements may operate independently in complex and dynamic contexts. The strong overlap between culture and structure further indicates that employees may perceive them as a unified organizational experience rather than as distinct constructs (Koohborfardhaghighi et al., 2022; Nasaireh et al., 2019).

OC emerges as the dominant predictor of employee outcomes, exerting a strong influence on JS, engagement, and development. This supports prior research emphasizing the centrality of culture in shaping employee attitudes and behaviors (Bishop, 2020; Lin & Huang, 2021; Sylejmani & Mesko, 2024). In contrast, OS demonstrates a more limited role, primarily influencing JS. This reinforces the view that structural mechanisms shape employee perceptions but do not directly translate into behavioral outcomes (Fraihat et al., 2023; Nosike et al., 2021).

The findings further highlight the central role of psychological mechanisms. EE emerges as the key predictor of retention, whereas SB plays an important role in driving ED. These results are consistent with literature emphasizing the importance of psychological states in shaping organizational outcomes (Fidyah & Setiawati, 2019; Soegiarto et al., 2024). However, the limited explanatory power for retention suggests that factors beyond internal organizational systems are critical, particularly external labor market conditions and career opportunities (Chizoba & Okechukwu, 2025).

5.2 Sectoral and Contextual Implications

Within the Nigerian oil and gas sector, characterized by high labor mobility and strong external employment opportunities, the findings suggest that internal organizational systems primarily shape EE rather than retention outcomes. Although culture significantly enhances engagement and development, its influence on retention remains constrained. This aligns with sector-specific evidence indicating that employee mobility is strongly influenced by external labor market conditions (Anodi et al., 2025; Chizoba & Okechukwu, 2025).

5.3 Managerial Implications

The findings indicate that managers should prioritize psychological mechanisms, particularly engagement and SB, rather than focusing solely on aligning OC and OS. Although alignment contributes to internal consistency and positive EE, it does not guarantee retention. Organizations should therefore leverage OC as a primary tool for enhancing development and engagement through practices that promote psychological safety, autonomy, and continuous learning (Bishop, 2020; Shamsuddin et al., 2023).

Retention strategies should extend beyond internal organizational design to incorporate external considerations such as competitive compensation and career advancement opportunities. This reinforces the importance of integrating both intrinsic and extrinsic drivers of employee behavior (Chizoba & Okechukwu, 2025).

5.4 Conclusion

This study demonstrates that OC is the primary driver of ED, whereas EE plays a central role in shaping retention. No evidence supports a synergistic interaction between culture and structure. The findings shift attention from structural alignment toward psychological mechanisms as the key drivers of employee outcomes. Though organizational systems remain important for shaping EE, they are insufficient to explain retention behavior in isolation. A more comprehensive approach that integrates organizational, psychological, and external factors is therefore necessary to effectively understand and manage ER.

Despite its contributions, this study is subject to several limitations. The cross-sectional design limits causal inference because the data capture employee perceptions at a single point in time. In future researchers could address this by adopting longitudinal designs to examine how organizational systems influence employee outcomes over time. The reliance on self-reported survey data introduces the possibility of common method bias, which researchers could mitigate in future studies with multi-source data, including supervisor assessments or organizational records. The lack of clear differentiation between OC and OS may reflect perceptual overlap among respondents, thereby limiting the ability to assess their independent and interactive effects. Additionally, single-item measures for key outcome constructs may limit the depth and reliability of construct measurement. The model's low explanatory power for ER also suggests that we did not include important predictors. Subsequently, researchers should incorporate external and individual-level factors such as compensation, labor market conditions, and career opportunities to provide a more comprehensive explanation of retention behavior. The focus on the Nigerian oil and gas sector may limit the generalizability of the findings. Future studies' authors could extend the model across different industries and geographic contexts to enhance external validity.

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Competing interests

We, the authors, declare that we have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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APPENDIX A

Table A1. Internal Consistency Reliability and Convergent Validity

Construct	Cronbach's a	rhoA	Composite Reliability (rhoC)	AVE
OC	0.872	0.890	0.913	0.724
OS	0.713	0.735	0.836	0.629
OC x OS	0.922	1.000	0.764	0.268
JS	1.000	1.000	1.000	1.000
EE	1.000	1.000	1.000	1.000
SB	1.000	1.000	1.000	1.000
ED	0.879	0.886	0.905	0.545
ER	1.000	1.000	1.000	1.000

Table A2. Fornell–Larcker Discriminant Validity Matrix

Variable	OC	OS	Oc x OS	JS	EE	SB	ED	ER
OC	0.851							
OS	0.836	0.793						
OC x OS	0.000	0.000	0.518					
JS	0.642	0.676	0.017	1.000				
EE	0.473	0.392	0.010	0.447	1.000			
SB	0.344	0.353	0.012	0.352	0.308	1.000		
ED	0.594	0.559	-0.056	0.514	0.293	0.382	0.738	
ER	0.101	0.044	-0.126	0.032	0.162	-0.036	0.071	1.000

Table A3. HTMT Discriminant Validity Matrix

Variable	OC	OS	Oc x OS	JS	EE	SB	ED	ER
OC	-							
OS	1.056	-						
OC x OS	0.000	0.000	-					
JS	0.695	0.791	0.062	-				
EE	0.494	0.429	0.118	0.447	-			
SB	0.359	0.406	0.073	0.352	0.308	-		
ED	0.648	0.639	0.105	0.545	0.316	0.411	-	
ER	0.099	0.147	0.054	0.032	0.162	0.036	0.108	-

Table A4. Scale Adaptations and Reliability

Adapted Scales:

- **OC Scale** (4 items, adapted from organizational culture frameworks such as Denison, 1990):
  - Items:
    1. *"How would you describe your company's culture and structure towards supporting employee development and retention?"*
    2. *"Organizational culture supports continuous learning"*
    3. *"Recognition and appreciation are culturally embedded"*
    4. *"Cultural values align with your personal/professional goals"*
  - **α = 0.872** (Good internal consistency).
  - **Source:** Denison Organizational Culture Survey (Denison, 1990)
- **OS Scale** (3 items, adapted from structural alignment and organizational design literature such as Burke–Litwin, 1992):
  - Items:
    1. *"How would you rate the alignment between your company's structure and its culture?"*
    2. *"Clear internal communication structures reduce ambiguity"*
    3. *"Career paths and internal mobility are structurally supported"*
  - **α = 0.713** (Acceptable internal consistency).
  - **Source:** Burke-Litwin Model, 1992
- **Employee Development (ED)** (8 items, adapted from training and development literature such as Marsick & Watkins, 2003):
  - Items:
    1. *"How often do you receive opportunities for skill enhancement, training, or career growth?"*
    2. *"Opportunities for cross-department learning"*
    3. *"Access to mentors or career coaches"*
    4. *"Feedback is constructive and tied to growth"*
    5. *"Structure allows room for experimentation and innovation"*

6. *"Learning and development goals are supported by leadership"*
7. *"Employees are encouraged to set and pursue development plans"*
8. *"Workload distribution reflects respect for employee well-being"*

- **α = 0.879** (Good internal consistency).
- **Source:** Dimensions of Learning Organizations Questionnaire (DLOQ) (Marsick & Watkins, 2003)

- **Job Satisfaction (JS)** (Single-item measure):
  - Items:
    - *"I experience high levels of job satisfaction in my role"*
  - **Source:** Common global satisfaction item used across organizational psychology studies (Wanous, Reichers & Hudy (1997))
- **Employee Engagement (EE)** (Single-item measure)
  - Items:
    - *"I feel highly engaged in my day-day work"*
  - **Source:** UWES – Utrecht Work Engagement Scale (Schaufeli & Bakker, 2006)
- **Sense of Belonging (SB)** (Single-item measure):
  - Items:
    - *"A strong sense of belonging among employees"*
    - **Source:** Organizational Identification Scale **(**Mael & Ashforth 1992)
- **Employee Retention (ER)** (Single-item measure):
  - Items:
    - *"To what extent do your company's culture and structural practices influence your decision to remain with the organization"*
  - **Source:** Affective Commitment Scale (Meyer & Allen, 1990), Job Embeddedness Scale (Mitchell et al., 2001)