

The Effect of Ergonomic Facility Management and Organizational Culture on Job Engagement through Quality of Work Life

*Mediating Effect of
Quality of Work Life
on Job Engagement*

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ABSTRACT

Human resources quality and job engagement are crucial to support high-pressure immigration services and ensure optimal, accountable public service delivery. This study examines whether environmentally ergonomic-based facility management and organizational culture influence job engagement among immigration office civil servants in the East Kalimantan-North Kalimantan region, and whether these effects operate through perceived quality of work life. Survey data from 397 civil servants were analyzed using partial least squares structural equation modeling with bootstrapping to estimate both direct and mediated relationships among the constructs. The results show that environmentally ergonomic-based facility management and organizational culture significantly improve the quality of work life, while neither variable has a significant direct effect on job engagement. Quality of work life exerts a strong positive effect on job engagement and fully transmits the effects of both workplace factors to engagement, indicating that improvements in engagement occur primarily when employees experience safer and healthier conditions, stronger development opportunities, and better work-life balance. The study discusses these patterns as evidence that public sector engagement initiatives are most effective when ergonomic and cultural interventions are integrated with programs that explicitly strengthen employees' quality of work life.

Keywords: *Ergonomic Facility Management, Job Engagement, Organizational Culture, Public Sector, Quality of Work Life.*

INTRODUCTION

In an era characterized by rapid change and constant transformation, Human Resources (HR) have become a vital asset for organizations across both the private and public sectors (Faugoo, 2024; Schulze & Dada, 2025). The role of employees extends beyond merely completing assigned tasks, it encompasses emotional engagement and commitment to their work. Within the administrative scope of the Regional Office of the Directorate General of Immigration for East and North Kalimantan, encompassing the Immigration Offices of Samarinda, Balikpapan, Bontang, Tanjung Redeb, Tarakan, and Nunukan, the enhancement of human resource quality represents a strategic priority in ensuring the delivery of optimal public services. As a frontline public institution, immigration services operate in a high-pressure environment shaped by strict legal standards, ethical demands, and high public scrutiny, making job engagement a critical requirement rather than an optional advantage (Olowu, 2024; Xatse & Naong, 2025).

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Emotionally engaged employees tend to demonstrate higher motivation, which positively influences productivity and work quality (Nusraningrum et al., 2024; Mvuyana et al., 2025). In contrast, insufficient employee engagement often results in diminished motivation, higher absenteeism rates, and deteriorating service performance. Consequently, job engagement emerges as a pivotal determinant of organizational effectiveness and sustainability. Building on this premise, the present research investigates how the quality of work life mediates the relationship between environmentally ergonomic facility management and organizational culture in shaping employees' job engagement.

Previous studies by Rahma and Astuti (2025) showed that although an ergonomic work environment has been proven to reduce fatigue and enhance employee performance, evidence on its mechanism for shaping job engagement in the public sector remains limited, particularly in immigration institutions where bureaucratic procedures and service risks may weaken the direct translation of ergonomic improvements into psychological engagement. Furthermore, although organizational culture is theoretically linked to employee engagement, Puspita (2020) findings indicate that this influence is not statistically significant. Meanwhile, research findings related to quality work life have also demonstrated inconsistency. The study revealed that among the four indicators of quality of work life, career development was identified as the sole factor exerting a statistically significant influence on employees' job engagement, while other indicators, such as compensation and workplace safety, showed no meaningful impact (Jumlad & Putri, 2021).

Building on these findings, this study seeks to address the existing empirical gap by introducing novelty in the use of measurement indicators, particularly for the quality of work life construct. In this study, quality work life is measured using the assessment indicators proposed by Wellem (2021), which are adapted to the characteristics of public sector organizations, thereby enabling a more context-sensitive capture of quality work life dimensions and yielding more comprehensive findings.

This study extends understanding of job engagement in the public sector by elucidating the mediating role of quality work life as a key mechanism linking organizational facilities and organizational culture to employees' engagement under bureaucratic and high-pressure service conditions. The findings offer actionable implications for immigration human resource management by identifying priority areas in ergonomics-based facility management, organizational culture, and quality work-life that should be strengthened to enhance job engagement and sustain service performance. This study aims to examine the effect of environmentally ergonomic-based facility management and organizational culture on job engagement mediated by quality of work-life.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

Factors Influencing Quality of Work Life

Environmentally ergonomic-based facility management has been widely recognized as a critical determinant of employees' quality of work life. By integrating ergonomic principles into workplace design, organizations can optimize physical conditions, reduce risks of injury, and enhance comfort and operational efficiency (Boatca et al., 2025). Factors such as appropriate lighting, ergonomically designed seating and desks, and technology that supports mobility and interaction contribute to a healthier and more efficient work environment, which in turn can improve employee satisfaction and productivity while lowering health-related costs (Voordt & Jensen, 2021). Pragmawiguno et al. (2023) and Hasanain (2024) further emphasize that human factors and ergonomics should be incorporated strategically into organizational planning and facility management policies, with careful attention to safety, efficiency, and risk mitigation in areas prone to ergonomic hazards.

Similarly, organizational culture represents a foundational framework shaping employees' perceptions, behavior, and overall work experience. Defined as the collective system of values, assumptions, and behavioral norms within an organization, culture

establishes a social and psychological climate that guides interactions and decision-making (Diwanti et al., 2021; Ardebilpour et al., 2024). Internalized cultural values influence how members perceive organizational realities and respond collectively, promoting alignment with institutional goals and enhancing psychological well-being (Lam et al., 2021; Kovoov-Misra et al., 2021; The et al., 2022; Bagga et al., 2023). Furthermore, culture is transmitted to new members to preserve organizational identity and core values, providing continuity in supportive norms that contribute to employee satisfaction, work engagement, and fulfillment (Daft, 1978; Hunsaker & Ding, 2022).

H1: Environmentally ergonomic-based facility management has a positive and significant effect on employees' quality of work life.

H2: Organizational culture has a positive and significant effect on employees' quality of work life.

Factors Influencing Quality of Job Engagement

Job engagement reflects employees' emotional, cognitive, and physical investment in their work and organizational goals, manifesting in sustained dedication, enthusiasm, and willingness to exceed formal job requirements. Highly engaged employees demonstrate pride and strong identification with their roles and organization, which strengthens organizational attachment and sense of purpose. Within this context, environmentally ergonomic-based facility management has emerged as a critical driver of engagement by integrating ergonomic principles to optimize the work environment, reduce injury risks, enhance comfort, and maximize efficiency (Boatca et al., 2025). Empirical studies in diverse sectors, including tourism and hospitality, indicate that workplaces designed with ergonomic considerations significantly enhance employee engagement (Amalia et al., 2021; El-Sherbeeney et al., 2023). Additionally, well-planned facility layouts prioritizing worker safety, operational efficiency, and health positively influence employees' physical and psychological well-being, fostering a performance-oriented and supportive work environment (Arvind et al., 2025; Aremu et al., 2025).

Organizational culture further shapes employee engagement by establishing shared values, behavioral norms, and contextual appropriateness, which guide interactions with colleagues, clients, and external stakeholders (Junita et al., 2022; Kim & Jung, 2022). Culture influences the extent to which employees align with the organization's identity and internalize its values, thereby affecting motivation and discretionary effort in their work (Casey et al., 2022; Harjanto & ER, 2023). Empirical evidence confirms that a supportive and constructive organizational culture significantly enhances employee engagement, translating into improved performance outcomes (Natasya & Awaluddin, 2021; Setyaningsih & Nawangsari, 2021; Febriani & Ramli, 2023).

H3: Environmentally ergonomic-based facility management has a positive and significant effect on employee job engagement.

H4: Organizational culture has a positive and significant effect on employee job engagement.

The Effect of Quality of Work Life on Job Engagement

Quality of work life denotes the degree to which employees experience satisfaction, personal fulfillment, and adequate organizational support within their professional environment (López-Martínez et al., 2021). Quality of work life reflects how workplace conditions influence employees' physical, psychological, and social well-being, which in turn affects their motivation, engagement, and performance (Bhende et al., 2020; Palupi, 2020). This concept encompasses various dimensions related to the quality of the work experience, including work-life balance, physical comfort, social support, opportunities for personal development, and recognition of individual contributions within the organization.

The concept of quality work life is multidimensional and shaped through social reproduction, in which individual perceptions of the work environment play a crucial role (Leitão et al., 2019). Moreover, quality of work life encompasses elements that support equilibrium between occupational responsibilities and personal life, thereby fostering greater job satisfaction and mitigating stress-related outcomes (Ingsih et al., 2022; Hammond et al., 2023). Research by Shaw et al. (2022) and Annisa et al. (2022) revealed that improvements in quality work life positively affect job engagement and reduce turnover intention. Similarly, Annisa et al. (2022) found that quality work life and social support significantly influence job engagement, underscoring the importance of a supportive work environment for employee well-being.

H5: Quality of work life has a positive and significant effect on employees' job engagement.

Quality of Work Life as Mediating Variable

Quality of work-life represents employees' satisfaction, fulfillment, and perception of organizational support within their work environment, encompassing physical, psychological, and social dimensions that influence motivation, engagement, and overall performance (López-Martínez et al., 2021). Factors such as work-life balance, physical comfort, opportunities for personal development, recognition, and social support collectively shape employees' perceived quality of work life, which in turn affects their emotional and cognitive investment in work (Ingsih et al., 2022; Hammond et al., 2023). Empirical evidence by Shaw et al. (2022) demonstrates that improvements in quality of work-life lead to higher job engagement and reduced turnover intention, highlighting the critical role of supportive work environments in sustaining employee well-being and organizational commitment. Organizational interventions that enhance ergonomic conditions, safety, and operational efficiency create the physical and psychological resources necessary for employees to thrive, indicating that quality of work-life functions as a key mechanism linking workplace conditions to engagement outcomes.

Both organizational culture and environmentally ergonomic-based facility management influence employees' engagement largely through their impact on the quality of work-life. Furthermore, studies by Lemma et al. (2022) and Oktariani et al. (2023) demonstrated that ergonomics-based facility management positively impacts the quality of work-life by enhancing comfort and employee performance. Meanwhile, Saripudin et al. (2023) showed that a positive organizational culture can improve both the quality of work and job engagement. The results corroborate the proposition that facility management grounded in environmental ergonomics, along with a supportive organizational culture, exerts a positive influence on employees' quality of work life. These findings support the conceptualization of quality of work-life as a mediating variable, linking organizational practices and culture to enhanced job engagement (Shaw et al., 2022; Annisa et al., 2022).

H6: Quality of work life mediates the relationship between environmentally ergonomic-based facility management and employees' job engagement.

H7: Quality of work life mediates the relationship between organizational culture and employees' job engagement.

Figure 1 presents the conceptual model of the study, illustrating the relationships among environmentally ergonomic-based facility management, organizational culture, quality of work life, and job engagement. The model proposes that both environmentally ergonomic-based facility management and organizational culture have direct effects on quality of work life (H1 and H2), as well as direct effects on job engagement (H3 and H4). In addition, quality of work life is hypothesized to have a direct positive effect on job engagement (H5). The dashed lines (H6 and H7) indicate the mediating role of quality of work life in the relationships between environmentally ergonomic-based facility

management and job engagement, as well as between organizational culture and job engagement, thereby highlighting the indirect effects within the proposed structural model.

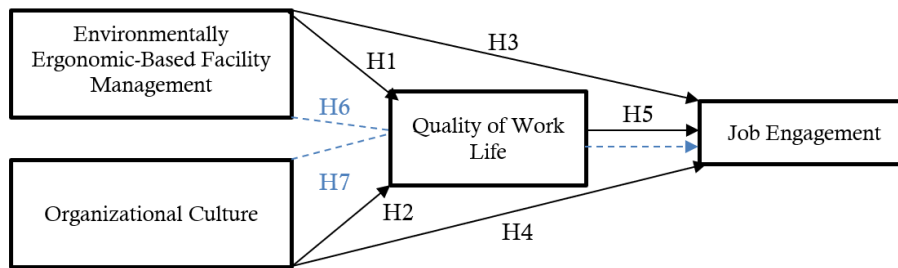


Figure 1. Conceptual Framework

RESEARCH METHODS

This study employed a quantitative methodology and utilized Structural Equation Modeling (SEM) to examine the mediating effect of quality of work life in the relationship between environmentally ergonomic-based facility management, organizational culture, and job engagement. SEM was selected due to its ability to simultaneously assess complex interrelationships among latent constructs while providing a comprehensive evaluation of the model's validity and reliability. The study was conducted among immigration office employees under the Ministry of Immigration and Corrections in the East Kalimantan–North Kalimantan (Kaltimara) region. The study population and sample were determined using a purposive sampling approach, in which participants were selected based on specific criteria aligned with the research objectives. The inclusion criteria were clearly established to ensure the relevance, consistency, and quality of the collected data, specifying that respondents must be Civil Servants (*Pegawai Negeri Sipil*/PNS) and employed at immigration offices under the Ministry of Immigration and Corrections in the Kaltimara region. Based on these criteria, the total sample in this study comprised 397 respondents.

In this study, environmentally ergonomic-based facility management is assessed through indicators including workplace ergonomics, physical environmental conditions, and the availability of facilities and measurement tools (Sarbat & Tasan, 2022). Organizational culture is captured by involvement, consistency, adaptability, and alignment with the organizational mission (Lasrado & Kassem, 2021). Job engagement is measured using vigor, dedication, and absorption as key indicators of employees' psychological investment in their work (Dunlop & Scheepers, 2023). Quality of work life is evaluated through the presence of a healthy and safe work environment, access to development and learning opportunities, and support for work–life balance (Wellem, 2021).

Primary data in this study were processed using Partial Least Squares (PLS) software, version 4.0. Model specification and parameter estimation were conducted through a systematic path modeling procedure, which recent literature regards as a reliable approach for testing conceptual frameworks involving interrelated variables and mediation mechanisms. A component-based SEM approach was selected due to its flexibility in addressing complex theoretical structures and its ability to simultaneously assess latent constructs along with their observed indicators. Within this analytical design, employees' extra-role contributions were positioned as a mediating mechanism linking key determinants to organizational outcomes. Subsequently, directional relationship testing was performed to evaluate the magnitude and statistical significance of the mediated pathways.

RESULTS

This study conducted a series of statistical tests to develop and validate the path analysis model using PLS-SEM. The measurement model was assessed against established criteria to ensure that each indicator accurately represented its construct. Validity and reliability were evaluated using factor loadings, Cronbach’s alpha, and composite reliability.

Convergent validity, as shown in Table 1, was confirmed by checking whether indicator loadings met the commonly applied threshold of 0.700. These tests provide a solid empirical basis for the subsequent analysis of structural relationships. The factor loading results indicate that all measurement items demonstrate strong convergent validity, as each loading exceeds the recommended threshold of 0.70. For environmentally ergonomic-based facility management, loadings range from 0.781 to 0.843. Organizational culture exhibits even stronger loadings, ranging from 0.806 to 0.881. Job engagement presents very high loadings between 0.863 and 0.907, particularly Y1 (0.907), indicating excellent construct representation. Similarly, quality of work life shows consistently high loadings from 0.839 to 0.870, confirming that all indicators reliably measure their respective constructs.

Table 1. Convergent Validity

Variables	Item	Loading Factor	Cronbach’s Alpha	Composite Reliability	AVE
Environmentally Ergonomic-Based Facility Management (X1)	X1.1	0.819	0.955	0.960	0.669
	X1.2	0.831			
	X1.3	0.811			
	X1.4	0.789			
	X1.5	0.823			
	X1.6	0.841			
	X1.7	0.827			
	X1.8	0.813			
	X1.9	0.834			
	X1.10	0.802			
	X1.11	0.781			
	X1.12	0.843			
Organizational Culture (X2)	X2.1	0.855	0.946	0.950	0.727
	X2.2	0.850			
	X2.3	0.825			
	X2.4	0.874			
	X2.5	0.881			
	X2.6	0.871			
	X2.7	0.856			
	X2.8	0.806			
Job Engagement (Y)	Y1	0.907	0.966	0.967	0.785
	Y2	0.874			
	Y3	0.888			
	Y4	0.863			
	Y5	0.891			
	Y6	0.890			
	Y7	0.890			
	Y8	0.891			
	Y9	0.877			
Quality of Work Life (Z)	Z1	0.869	0.954	0.956	0.724
	Z2	0.847			
	Z3	0.855			
	Z4	0.842			
	Z5	0.870			
	Z6	0.865			
	Z7	0.842			
	Z8	0.857			
	Z9	0.839			

The reliability test results show that all constructs have excellent internal consistency, as reflected in the Cronbach's Alpha (CA) and Composite Reliability (CR) values. Environmentally ergonomic-based facility management has a CA of 0.955 and a CR of 0.960, while organizational culture records 0.946 and 0.950, respectively. Job engagement demonstrates the highest reliability with a CA of 0.966 and a CR of 0.967, followed by quality of work life with a CA of 0.954 and a CR of 0.956. All values exceed the recommended threshold of 0.70, indicating that the indicators used in each construct are highly consistent and reliable in measuring their respective latent variables.

Furthermore, the Average Variance Extracted (AVE) values for all constructs are above the minimum threshold of 0.50, confirming good convergent validity. Specifically, environmentally ergonomic-based facility management has an AVE of 0.669, organizational culture reaches 0.727, job engagement shows the highest AVE at 0.785, and quality of work life records 0.724. These results indicate that each construct explains more than half of the variance of its indicators, demonstrating that the measurement model has strong validity. The combination of high CA, CR, and AVE values confirms that the constructs are both reliable and valid for further structural model analysis.

Table 2. Predictive Relevance

Variable	Q ² (=1-SSE/SSO)
Job Engagement	0.119
Quality of Work Life	0.084

A predictive relevance test was conducted to assess the model's predictive capability using the blindfolding procedure by examining the Q-square value. The model is considered to have good predictive quality when the Q-square value is greater than zero, whereas a Q-square value below zero indicates poor predictive quality. The Q-square (Q²) values indicate that the model has predictive relevance for the endogenous variables. Specifically, job engagement shows a Q² value of 0.119, while quality of work life has a Q² value of 0.084. This suggests that the model possesses adequate predictive capability in explaining the observed data.

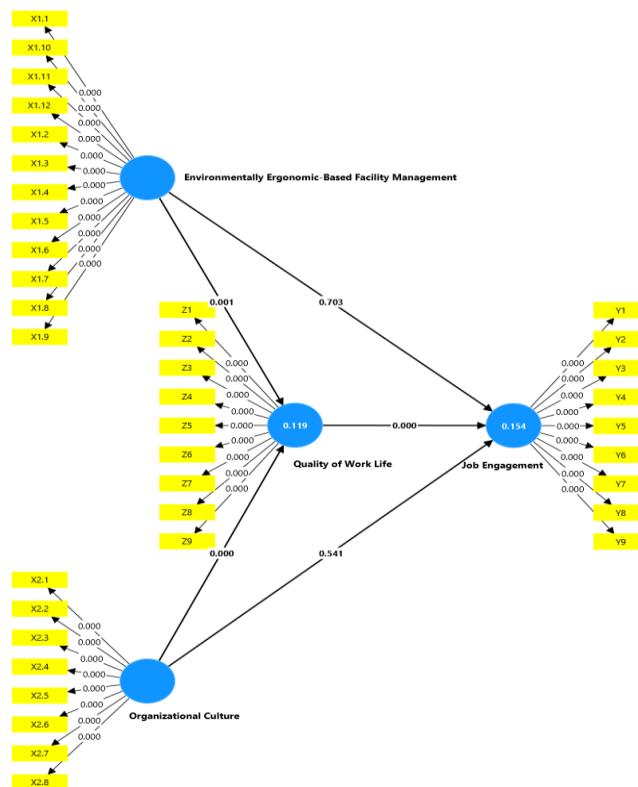


Figure 2. Bootstrapping Results

Figure 2 shows that the model accounts for 11.9% of the variance in quality of work life ($R^2 = 0.119$) and 15.4% of the variance in job engagement ($R^2 = 0.154$). Environmentally ergonomic-based facility management and organizational culture act as key predictors, with quality of work life serving as a mediating variable. These results indicate that sustainable, ergonomically designed workplace facilities and a supportive organizational culture contribute to improvements in employees' perceived quality of work life, which in turn positively affects their engagement levels. Although the explained variance is moderate, the findings highlight the relevance of integrating environmental ergonomics and cultural factors to enhance both well-being and job engagement.

Table 3. Hypothesis Result

Hypothesis	Original Sample	t-statistics	p-values	Decision
Environmentally Ergonomic-Based Facility Management -> Quality of Work Life	0.176	3.284	0.001	Accepted
Organizational Culture -> Quality of Work Life	0.247	4.707	0.000	Accepted
Environmentally Ergonomic-Based Facility Management -> Job Engagement	0.019	0.381	0.703	Rejected
Organizational Culture -> Job Engagement	0.029	0.612	0.541	Rejected
Quality of Work Life -> Job Engagement	0.378	7.956	0.000	Accepted

Table 3 shows that environmentally ergonomic-based facility management has a positive and significant effect on quality of work life ($\beta = 0.176$; $t = 3.284$; $p = 0.001$), and organizational culture also has a significant effect on quality of work life ($\beta = 0.247$; $t = 4.707$; $p = 0.000$). However, neither has a significant direct effect on job engagement, with values of $\beta = 0.019$; $t = 0.381$; $p = 0.703$ and $\beta = 0.029$; $t = 0.612$; $p = 0.541$, respectively. Conversely, quality of work life has a positive and significant effect on job engagement ($\beta = 0.378$; $t = 7.956$; $p = 0.000$), indicating its role as a key factor in increasing work engagement.

Table 4. Indirect Effect

Hypothesis	Original Sample	t-statistics	p-values	Decision
Environmentally Ergonomic-Based Facility Management -> Quality of Work Life -> Job Engagement	0.066	2.994	0.003	Accepted
Organizational Culture -> Quality of Work Life -> Job Engagement	0.093	3.987	0.000	Accepted

Table 4 shows that the indirect effect of environmentally ergonomic-based facility management on job engagement through quality of work life is positive and significant ($\beta = 0.066$; $t = 2.994$; $p = 0.003$). Similarly, organizational culture has a stronger and more significant indirect effect on job engagement through quality of work life ($\beta = 0.093$; $t = 3.987$; $p = 0.000$). These findings confirm that the quality of work life plays a significant mediating role in increasing job engagement.

DISCUSSION

The findings show that environmentally ergonomic-based facility management significantly affects the quality of work life, highlighting its role in creating favorable workplace conditions. Consistent with prior research, factors such as spatial layout, lighting, ventilation, and noise control influence employees' experiences and well-being (Voordt & Jensen, 2021; Aremu et al., 2025). In the Immigration Office context, ergonomic improvements support operational performance and service quality while mitigating fatigue and health risks, further enhancing the quality of work life. The results show that organizational culture has a statistically significant effect on employees' quality of work life, underscoring the importance of cultivating a respectful, collaborative, and

psychologically safe work environment. This finding is consistent with Kim and Lee (2023) that empowering and relationship-oriented cultural norms enhance the quality of work life by mitigating workplace stressors and supporting employee well-being. In addition, organizational culture has been linked to stronger performance outcomes, suggesting that improvements in quality of work life may translate into greater employee effectiveness (Sulistiyani, 2022).

The findings indicate that environmentally ergonomic-based facility management does not have a statistically significant direct effect on job engagement, suggesting that while ergonomic improvements enhance physical comfort and operational efficiency, they alone are insufficient to increase psychological or behavioral engagement. Ergonomics functions primarily as a foundational job resource and requires complementary organizational conditions, such as recognition, participation, developmental support, and trust-based leadership, to elicit stronger engagement (Arvind et al., 2025). Similarly, organizational culture does not directly influence engagement, as its effects often operate indirectly through mechanisms like employer branding, perceived organizational support, or job characteristics that shape engagement and satisfaction (Annisa et al., 2022; Hammond et al., 2023). Evidence also shows that culture may improve job satisfaction without necessarily enhancing engagement, particularly when support systems or cultural dimensions have varying impacts, and high work demands or insufficient resources can further limit its direct effect.

The findings show that the quality of work life has a strong and significant effect on job engagement, indicating that safe, supportive, and development-oriented work conditions enhance employee motivation and sustained involvement. Operationalized through workplace safety, learning opportunities, and work–life balance, quality of work life predicts engagement beyond career development alone and aligns with prior studies linking it to job satisfaction, organizational citizenship, and engagement outcomes (Jumlad & Putri, 2021). From a theoretical perspective, the results support the Job Demands–Resources framework, where organizational resources embedded in quality of work life act as motivational drivers that reduce strain and strengthen psychological attachment to work.

The results demonstrate that quality of work life acts as a significant mediator between environmentally ergonomic-based facility management and job engagement, indicating that ergonomic improvements alone are insufficient to enhance engagement unless they also improve employees' perceived quality of work life, including comfort, safety, and overall well-being. Ergonomic interventions can reduce physical strain and support more efficient task execution, which in turn strengthens motivation and sustained involvement in work activities, consistent with evidence that quality of work life underpins employee engagement and that supportive work environments enhance performance (Lemma et al., 2022; Oktariani et al., 2023). Organizational culture indirectly influences job engagement through the mediating role of quality of work life, suggesting that cultural values such as fair treatment, recognition, supportive communication, and collaboration enhance engagement when embedded in daily practices. This extends prior findings on the quality of work life and supportive organizational practices to employee well-being, discretionary behaviors, and broader performance outcomes (Shaw et al., 2022; Annisa et al., 2022).

CONCLUSION

Based on the findings and analytical results, this study concludes that environmentally ergonomic-based facility management and organizational culture significantly influence the quality of work life, but do not have a direct effect on job engagement. Quality of work life has a significant effect on job engagement and mediates the relationship between both independent variables and job engagement. The results indicate that the quality of work life serves as the primary mechanism through which environmentally ergonomic-based facility management and organizational culture influence employees' psychological attachment to their work, predominantly through indirect pathways.

This study strengthens the understanding of job engagement in the public sector by affirming that improvements in facilities and organizational culture are more effective in enhancing engagement when employees perceive their quality of work life as safe, supportive, and aligned with well-being. From a managerial perspective, the findings suggest that improving engagement requires an integrated approach that combines ergonomics-based workplace design, participative cultural practices, and targeted quality of work life programs. For human resource management in public service institutions such as immigration offices, engagement initiatives should be coordinated across facility management and human resource policies, including workload regulation, the reinforcement of psychological safety, and supervisory support.

This study has several limitations. First, it was conducted only among immigration office employees under the Ministry of Immigration and Corrections in the East Kalimantan–North Kalimantan region, and therefore, the generalizability of the findings to other public institutions or regions should be approached with caution. Second, the data were collected at a single point in time using a cross-sectional design, so the results are best interpreted as associations between variables rather than definitive causal relationships. Future research is encouraged to broaden the institutional and regional scope and to employ longitudinal designs to strengthen causal inference.

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