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IMPACT OF WORK ENVIRONMENT DIMENSIONS ON NURSE PERFORMANCE: EVIDENCE FROM A NIGERIAN TERTIARY HOSPITAL

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ABSTRACT

This study investigates the direct effects of three work environment dimensions- physical, psychological, and social- on nurse performance at Federal Medical Centre Gusau, Nigeria, using a quantitative cross-sectional survey of 154 nurses and Partial Least Squares Structural Equation Modeling (PLS-SEM). The results explain 54% of the variance in nurse performance ($R^2 = 0.54$) and reveal that the psychological work environment has a significant positive effect ($\beta = 0.188$, $p = 0.008$), supporting H_2, while the physical work environment shows a positive but non-significant effect ($\beta = 0.103$, $p = 0.096$) and the social work environment exhibits a non-significant negative association ($\beta = -0.080$, $p = 0.150$). The study concludes that the psychological work environment- comprising autonomy, recognition, emotional support, and psychological safety- is the most critical direct predictor of nurse performance in this Nigerian tertiary hospital context, suggesting that management interventions should prioritize psychological resources over physical or social investments alone, as interpreted through Herzberg's Two-Factor Theory and the Job Demands-Resources Model.

Keywords: Work environment; nurse performance; psychological work environment; physical work environment; social work environment; Nigerian tertiary hospital.

1. INTRODUCTION

Nurse performance is a critical determinant of healthcare quality, directly influencing patient outcomes, safety, and overall service efficacy (Liu & Aungsuroch, 2018). As frontline caregivers, nurses operate within a complex interplay of workplace conditions that can either enable or hinder their professional effectiveness. The work environment, encompassing the physical, psychological, and social dimensions of the workplace, is widely recognized as a pivotal factor shaping employee well-being, job satisfaction, and performance outcomes (Ali & Qassem, 2023; De Andrade et al., 2024).

Globally, research underscores that supportive work environments characterized by adequate resources, positive interpersonal dynamics, and psychological safety are associated with reduced burnout, higher retention, and enhanced care quality (Kohnen et al., 2023; Vleminckx et al., 2024). Conversely, challenging conditions, such as inadequate staffing, poor infrastructure, and lack of managerial support, detrimentally affect nurses' ability to perform optimally (Oleribe et al., 2019). In resource-constrained settings, these challenges are often exacerbated, presenting significant barriers to healthcare delivery.

However, the empirical evidence remains uneven. While substantial research has been conducted in high- and middle-income contexts, there is a relative dearth of studies from under-resourced healthcare systems in sub-Saharan Africa, particularly Nigeria (Alegbeleye et al.,

2020; Odiachi, 2022). Furthermore, existing studies often examine the work environment as a monolithic construct or focus on isolated dimensions, limiting understanding of how its distinct facets physical, psychological, and social uniquely contribute to performance outcomes (Ali & Qassem, 2023).

This gap is particularly salient in northern Nigeria, where healthcare institutions like the Federal Medical Centre (FMC) Gusau in Zamfara State grapple with systemic challenges. Understanding the specific drivers of nurse performance in such a context is essential for developing targeted, effective interventions.

Therefore, this study aims to address this gap by investigating the direct effects of three specific dimensions of the work environment physical, psychological, and social on the performance of nurses at FMC Gusau, Nigeria. By disaggregating the work environment and focusing on a under-studied setting, this article seeks to provide nuanced, context-specific evidence to inform management practices and policy aimed at strengthening the nursing workforce and, ultimately, healthcare delivery.

2. LITERATURE REVIEW

2.1 Conceptual Review

Nurse Performance is conceptualized as the effectiveness with which nursing professionals fulfill their assigned roles, encompassing the quality, efficiency, and adherence to standards in patient care, teamwork, and administrative responsibilities (Anakpo, Nqwayibana, & Mishi, 2023). It is a multi-dimensional outcome that directly impacts organizational goals and patient safety.

The Work Environment is defined as the aggregate of conditions, structures, and perceptions within which work is performed. For this study, it is operationalized through three distinct dimensions:

Physical Work Environment (PWE): This refers to the tangible, infrastructural aspects of the workplace, including the adequacy of equipment, workspace layout, lighting, ventilation, and ergonomic conditions (Chandrasekar, 2011).

Psychological Work Environment (PSY): This encompasses the emotional and cognitive conditions of work, such as perceived autonomy, level of emotional support, freedom from excessive stress, job security, and the sense of being valued and recognized (Mozgovoy, 2022).

Social Work Environment (SWE): This dimension pertains to the quality of interpersonal relationships, teamwork, communication flows, and the degree of collaborative support among colleagues and between staff and management (Karsim et al., 2023).

2.2 Theoretical Foundation

This study is anchored in an integration of Herzberg's Two-Factor Theory (Herzberg, 1959) and the Job Demands-Resources (JD-R) Model (Demerouti et al., 2001), providing a robust framework for analyzing the work environment-performance nexus.

Herzberg's theory distinguishes between hygiene factors (whose absence causes dissatisfaction) and motivators (whose presence fosters satisfaction and improved performance). In the nursing context, the Physical Work Environment aligns with hygiene factors; inadequate facilities can cause profound dissatisfaction, but their mere adequacy may not be a strong motivator (Afolabi et al., 2020). Conversely, aspects of the Psychological Work Environment, such as recognition, responsibility, and achievement, function as potent motivators (Ali & Qassem, 2023).

The JD-R Model complements this by positing that job resources (supervisory support, autonomy, positive climate) buffer the impact of job demands and stimulate motivation, leading to positive outcomes like high performance. Both the psychological and social work environments are critical bundles of job resources. The model helps explain how a supportive PSY and SWE can enhance nurses' energy and reduce the health-impairing effects of their demanding roles, thereby facilitating better performance (Kohnen et al., 2023).

2.3 Empirical Review

Empirical studies consistently highlight the significant role of the work environment, though the strength of this relationship varies across its dimensions and contexts.

Physical Work Environment and Performance: Research in Nigerian settings presents mixed evidence. While studies in university libraries and breweries have found positive correlations between ergonomic conditions and performance (Nzewi et al., 2018; Alegbeleye et al., 2020), research specific to nursing has sometimes shown that the direct effect of physical factors may be secondary to other motivators (Apex-Apeh et al., 2020). This suggests that PWE may be a necessary foundational factor but not a sufficient driver of peak performance.

Psychological Work Environment and Performance: The evidence for the psychological dimension is more robust and consistent. Studies across various countries indicate that factors like autonomy, emotional support, and a sense of safety are strongly linked to reduced burnout, higher job satisfaction, and enhanced care quality (De Andrade et al., 2024; Kohnen et al., 2023). In Iraqi hospitals, Ali and Qassem (2023) found a significant positive relationship between nurses' satisfaction with their psychological work environment and their job performance.

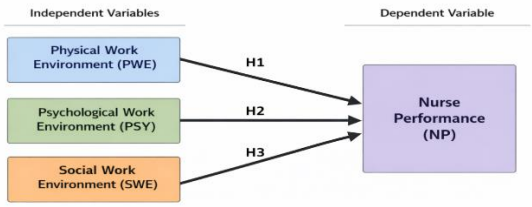
Social Work Environment and Performance: The social dimension, characterized by teamwork and managerial support, is frequently cited as a key performance driver. Research in Jordan and Turkey has shown that structural empowerment and positive colleague relationships significantly improve nurse performance (Ta'An et al., 2020; Sarıköse & Göktepe, 2022). However, a study in an Indonesian emergency room found an insignificant direct effect, suggesting the relationship may be complex and potentially mediated by other factors like empowerment (Udaksana et al., 2022).

Despite this growing body of literature, a clear gap exists in understanding the relative and direct influence of these three distinct dimensions within a single, under-resourced healthcare context like Nigeria's public tertiary hospitals. Most studies either treat the work environment as a composite construct or are conducted in geographically different settings, limiting their contextual applicability.

2.4 Conceptual Framework and Hypotheses

Based on the synthesized literature and theoretical grounding, the following conceptual framework (Figure 1) and hypotheses are proposed to guide the investigation of direct relationships:

Figure 1: Conceptual Framework and Hypotheses



H_1: The Physical Work Environment has a significant positive effect on Nurse Performance.

H_2: The Psychological Work Environment has a significant positive effect on Nurse Performance.

H_3: The Social Work Environment has a significant positive effect on Nurse Performance.

3. METHODOLOGY

This study employed a quantitative, cross-sectional survey design to examine the direct relationships between work environment dimensions and nurse performance. The research was conducted at the Federal Medical Centre (FMC) Gusau, Zamfara State, Nigeria, with a target population of 420 nurses. A sample size of 204 was determined using the Taro Yamane formula, and a stratified sampling technique was utilized to ensure representation across hospital departments (Hair et al., 2019). Data were collected via a structured, self-administered questionnaire. The instrument measured the three independent constructsPhysical Work Environment (7 items, adapted from Chandrasekar, 2011), Psychological Work Environment (7 items, adapted from Chandrasekar, 2011), and Social Work Environment (7 items, adapted from Chiaburu & Harrison, 2008) and the dependent variable, Nurse Performance (7 items, adapted from Bakker & Demerouti, 2007), using a five-point Likert scale. After data screening, 154 valid responses were analyzed. Given the model's complexity and the non-normal distribution of the data, the hypotheses were tested using Partial Least Squares Structural Equation Modeling (PLS-SEM) with WarpPLS software, which is robust for predictive analysis and does not assume strict data normality (Hair et al., 2014).

4. RESULTS AND DISCUSSION

4.1 Descriptive Statistics and Respondent Profile

A total of 154 valid questionnaires were analyzed, yielding a robust response rate of 75.5%. The demographic profile of the respondents (Table 1) reflects the composition of the nursing workforce at FMC Gusau. The sample was predominantly female (63.6%), which is representative of the gender distribution in the nursing profession in Nigeria. A majority were married (62.3%), of Hausa ethnicity (65.6%), and Muslim (76.0%), accurately mirroring the regional socio-cultural context. In terms of professional tenure, over half (51.9%) had up to 5 years of experience, indicating a relatively young workforce, while 40.3% earned a monthly income between ₦100,001 and ₦200,000. This profile provides essential context for interpreting the study's findings within the specific institutional and regional setting.

Table 1

Demographic Profile of Respondents (N = 154)

Characteristic	Category	n	%
Gender	Male	56	36.4
	Female	98	63.6
Marital Status	Single	54	35.1
	Married	96	62.3
	Separated	4	2.6
Ethnicity	Hausa	101	65.6
	Yoruba	18	11.7
	Igbo	16	10.4
	Others	19	12.3
Years of Experience	Up to 5 years	80	51.9
	6–15 years	44	28.6
	16–25 years	14	9.1
	26 years and above	16	10.4

Note. Percentages may not total 100 due to rounding.

4.2 Assessment of the Measurement Model

Prior to testing the structural hypotheses, the reliability and validity of the measurement model were assessed using Partial Least Squares Structural Equation Modeling (PLS-SEM) criteria.

4.2.1 Internal Consistency Reliability and Convergent Validity

As shown in Table 2, all constructs demonstrated strong internal consistency. Composite Reliability (CR) values ranged from 0.875 to 0.955, and Cronbach's Alpha (α)

values ranged from 0.821 to 0.944, all exceeding the recommended threshold of 0.70 (Hair et al., 2019). Convergent validity was established as all indicator loadings were above 0.70, and the Average Variance Extracted (AVE) for each construct exceeded the minimum of 0.50 (Fornell & Larcker, 1981). The AVE values were: Physical Work Environment (PWE) = 0.585, Psychological Work Environment (PSY) = 0.618, Social Work Environment (SWE) = 0.744, and Nurse Performance (NP) = 0.751.

Table 2

Measurement Model Assessment: Reliability and Convergent Validity

Construct and Items	Factor Loadings	α	CR	AVE
Physical Work Environment (PWE)		0.821	0.875	0.585
PWE1	0.718			
PWE3	0.731			
PWE4	0.798			
PWE5	0.842			
PWE7	0.728			
Psychological Work Environment (PSY)		0.845	0.890	0.618
PSY1	0.804			
PSY3	0.777			
PSY4	0.783			
PSY6	0.817			
PSY7	0.746			
Social Work Environment (SWE)		0.914	0.935	0.744
SWE1	0.869			
SWE2	0.908			
SWE3	0.847			
SWE4	0.854			
SWE5	0.832			
Nurse Performance (NP)		0.944	0.955	0.751
NP1	0.811			
NP2	0.870			
NP3	0.917			
NP4	0.896			
NP5	0.821			
NP6	0.868			
NP7	0.876			

Note. α = Cronbach's alpha; CR = composite reliability; AVE = average variance extracted. Factor loadings ≥ .70 indicate acceptable indicator reliability. CR values ≥ .70 and AVE values ≥ .50 demonstrate adequate convergent validity.

4.2.2 Discriminant Validity

Discriminant validity was confirmed using the Heterotrait-Monotrait (HTMT) ratio of correlations (Henseler et al., 2015). As presented in Table 3, all HTMT values were below the conservative threshold of 0.85, indicating that each construct is distinct from the others. The square root of the AVE for each construct (diagonal values in Table 4) was also greater than its correlations with other constructs, satisfying the Fornell-Larcker criterion (Fornell & Larcker, 1981).

Table 3

Discriminant Validity Using Heterotrait–Monotrait (HTMT) Ratios

Construct	PWE	PSY	SWE	NP
PWE				
PSY	0.886			
SWE	0.759	0.875		
NP	0.733	0.800	0.899	

Note. PWE = Physical Work Environment; PSY = Psychological Work Environment; SWE = Social Work Environment; NP = Nurse Performance. HTMT values below .90 indicate adequate discriminant validity.

Table 4

Discriminant Validity Assessment Using the Fornell–Larcker Criterion

Construct	PWE	PSY	SWE	NP
PWE	**0.765**			
PSY	0.738	**0.786**		
SWE	0.656	0.768	**0.862**	
NP	0.642	0.713	0.836	**0.866**

Note. PWE = Physical Work Environment; PSY = Psychological Work Environment; SWE = Social Work Environment; NP = Nurse Performance. Diagonal values (bolded) represent the square root of the average variance extracted (AVE). Discriminant validity is established when the square root of AVE for each construct exceeds its correlations with other constructs.

4.3 Structural Model and Hypothesis Testing

The structural model was evaluated for collinearity, predictive relevance, and the significance of path coefficients. The Variance Inflation Factor (VIF) values for all constructs were below 3.3, indicating no harmful collinearity (Diamantopoulos & Siguaw, 2006). The model's predictive power was substantial, explaining 54% ($R^2 = 0.54$) of the variance in Nurse Performance (see Figure 1). The results of the hypothesis testing are summarized in Table 5.

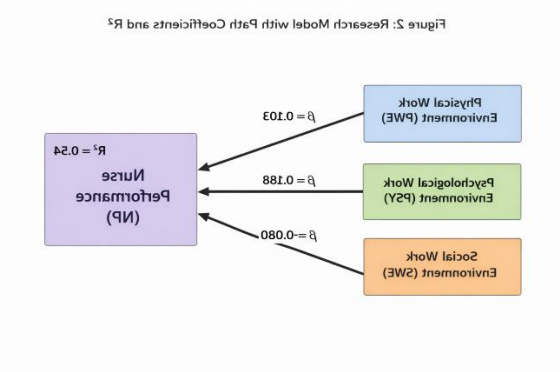


Table 5

Results of Structural Model Analysis (Direct Effects)

Hypothesis	Structural Path	β	*p*	Decision
H_1	PWE → NP	0.103	.096	Not supported
H_2	PSY → NP	0.188	.008	Supported
H_3	SWE → NP	−0.080	.150	Not supported

Note. PWE = Physical Work Environment; PSY = Psychological Work Environment; SWE = Social Work Environment; NP = Nurse Performance. β represents standardized path coefficients.

H_1: Effect of Physical Work Environment (PWE). The hypothesis that PWE has a significant positive effect on nurse performance was not supported ($\beta = 0.103$, $p = 0.096$). While the relationship is positive, it is not statistically significant at the $p < 0.05$ level.

H_2: Effect of Psychological Work Environment (PSY). The hypothesis that PSY has a significant positive effect on nurse performance was strongly supported ($\beta = 0.188$,

p = 0.008). This indicates that a one-unit improvement in the psychological work environment is associated with a 0.188 unit increase in nurse performance, holding other factors constant.

H_3: Effect of Social Work Environment (SWE). The hypothesis that SWE has a significant positive effect on nurse performance was not supported. Interestingly, the path coefficient was negative and non-significant (β = -0.080, p = 0.150).

4.4 Discussion of Findings

The primary objective of this study was to investigate the direct effects of three specific work environment dimensions on the performance of nurses in a Nigerian tertiary hospital. The findings offer nuanced insights that both confirm and challenge aspects of existing literature.

The most salient finding is the significant positive effect of the Psychological Work Environment (PSY) on performance. This result strongly aligns with Herzberg's Two-Factor Theory, which positions elements like recognition, responsibility, and the work itself as true motivators (Herzberg, 1959). In the context of FMC Gusau, factors such as perceived autonomy, emotional support from management, and a sense of being valued appear to be powerful drivers that enhance nurses' ability to perform effectively. This finding is consistent with prior research in other settings, such as the work of Ali and Qassem (2023) in Iraq, which identified psychological satisfaction as a key performance predictor. Furthermore, it corroborates the Job Demands-Resources (JD-R) model, where psychological resources buffer job demands and stimulate motivational processes, leading to higher performance (Kohnen et al., 2023).

Conversely, the non-significant effect of the Physical Work Environment (PWE) suggests its role may be that of a hygiene factor, as theorized by Herzberg. Adequate equipment, lighting, and workspace likely prevent severe dissatisfaction and are necessary for basic functioning, but their presence alone does not actively motivate superior performance. This finding echoes studies like that of Apex-Apeh et al. (2020) in Enugu State, where the work environment did not significantly predict nurse performance. It implies that in resource-constrained settings, investments in physical infrastructure, while critical for safety and basic service delivery, must be coupled with investments in the psychological climate to yield significant performance gains.

The non-significant negative path for the Social Work Environment (SWE) is intriguing and warrants careful interpretation. While it contradicts the common emphasis on teamwork and collegial support, it may reflect the specific contextual realities of the study setting. In a high-pressure, potentially under-resourced environment like FMC Gusau, social interactions could sometimes manifest as sources of conflict, gossip, or unproductive socializing that detracts from task focus. Alternatively, it may indicate that the positive benefits of a good social environment are indirect, perhaps mediated by psychological safety or organizational commitment, rather than having a direct effect on performance outcomes. This aligns with the finding of Udaksana et al. (2022) in Bali, where the work environment's direct effect was insignificant. It suggests that fostering a positive social climate is complex and its impact on performance may not be straightforward or automatically positive.

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This study set out to investigate the direct effects of three distinct dimensions of the work environmentphysical, psychological, and socialon the performance of nurses at the Federal Medical Centre Gusau, Nigeria. Grounded in an integrated framework of Herzberg's Two-Factor Theory and the Job Demands-Resources (JD-R) Model, the research provides clear, empirical evidence that these dimensions exert differential influences.

The key conclusion is that the Psychological Work Environment (PSY) is the most critical and significant direct predictor of nurse performance in this context. Factors such as perceived autonomy, emotional support, recognition, and psychological safety operate as powerful motivators and job resources, directly energizing nurses and enhancing their ability to perform effectively. This finding robustly supports H_2 and underscores the centrality of the cognitive and emotional climate in healthcare work settings (Ali & Qassem, 2023; Kohnen et al., 2023).

Conversely, the Physical Work Environment (PWE), while important, functions primarily as a hygiene factor.

Its positive but non-significant effect leads to the rejection of H_1, indicating that adequate infrastructure and equipment are necessary to prevent dissatisfaction but are insufficient on their own to drive higher performance (Apex-Apeh et al., 2020; Herzberg, 1959). The Social Work Environment (SWE) demonstrated a non-significant negative path, leading to the rejection of H_3. This suggests that in the specific high-pressure context of FMC Gusau, social dynamics may not directly facilitate task performance and could potentially introduce relational complexities that detract from core duties, highlighting the nuanced and sometimes ambiguous role of social factors (Udaksana et al., 2022).

5.2 Recommendations

Based on the foregoing conclusions, the following actionable recommendations are proposed for hospital management, policymakers, and researchers:

5.2.1 Managerial and Policy Recommendations

1. Prioritize Investment in the Psychological Work Environment: Hospital administration should implement structured programs aimed at bolstering psychological resources. This includes:

Leadership Training: Equip nurse managers with skills in transformational leadership, empathetic communication, and fair recognition practices to foster a climate of respect and value.

Mental Health and Well-being Programs: Establish accessible, confidential counseling services and stress-management workshops to help nurses cope with occupational stressors.

Enhancing Autonomy and Participation: Involve nurses in unit-level decision-making processes related to patient care workflows and scheduling, where feasible, to increase their sense of control and professional ownership.

5.5.2. Adopt a Targeted Approach to the Physical and Social Environments:

Physical Environment: While continued advocacy for improved infrastructure is essential, managers should frame these investments as foundational for safety and basic efficiency, not as standalone performance boosters. Resources should be allocated strategically to areas that most directly reduce daily frustrations (reliable equipment, ergonomic furniture).

Social Environment: Management should actively shape the social climate to ensure it supports performance. This involves:

Facilitating structured, task-oriented teamwork through clear protocols.

Implementing swift and fair conflict resolution mechanisms.

Organizing professional development activities that build collegiality aligned with clinical goals, rather than unfocused social events.

Table 5

Summary of Key Findings and Corresponding Managerial Recommendations

Work Environment Dimension	Key Findings	Managerial Recommendations
Psychological Work Environment (PSY)	Demonstrated a significant positive effect on nurse performance ($\beta = 0.188$, $p < .01$), indicating the strongest influence among the examined dimensions.	Implement leadership development initiatives, provide mental health and well-being support programs, and promote participatory decision-making practices.
Physical Work Environment (PWE)	Exhibited a positive but non-significant relationship with nurse performance ($\beta = 0.103$, $p > .05$), suggesting a hygiene rather than a motivating factor.	Prioritize strategic infrastructure investments aimed at eliminating critical bottlenecks, improving safety conditions, and ensuring functional adequacy of facilities.
Social Work Environment (SWE)	Showed a non-significant negative association with nurse performance ($\beta = -0.080$, $p > .05$), indicating an ambiguous or context-dependent effect.	Proactively manage workplace social dynamics through structured team-based activities, conflict management mechanisms, and goal-oriented collaboration frameworks.

Note. β represents standardized path coefficients. Statistical significance was evaluated at $p < .05$.

5.2.2 Recommendations for Future Research

To build upon this study, future research should:

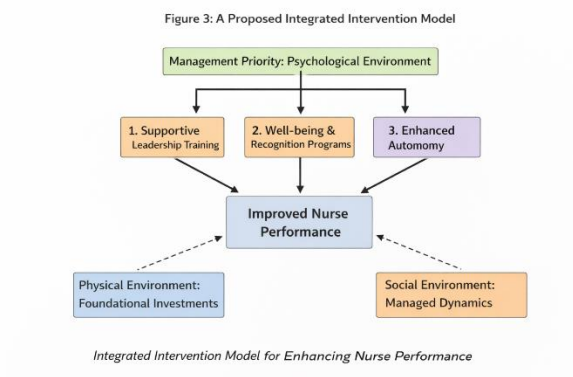
i. Explore Mediating Mechanisms: Investigate how the psychological environment influences performance by testing potential mediators such as work engagement, organizational commitment, or burnout (Demerouti et al., 2001). This can unpack the "black box" of the established direct relationship.

ii. Conduct Longitudinal and Intervention Studies: Employ longitudinal designs to establish causality and assess the impact of specific interventions (a leadership training program) on changes in the psychological environment and subsequent performance metrics over time.

iii. Broaden the Context: Replicate this study in other Nigerian healthcare settings (primary healthcare centers, private hospitals) and other sub-Saharan African countries to test the generalizability of the findings and identify context-specific moderators.

iv. Incorporate Qualitative Insights: Use mixed-methods approaches to gain a deeper understanding of the nuanced negative trend associated with the social environment. Interviews or focus groups could reveal the specific nature of social interactions that nurses find unhelpful or detrimental to their work.

Figure 3: A Proposed Integrated Intervention Model



In essence, enhancing nurse performance in hospitals like FMC Gusau requires a paradigm shift from a generic focus on improving "working conditions" to a strategic, evidence-based emphasis on cultivating a psychologically empowering and safe workplace. This approach promises not only better performance but also greater well-being and retention for the nursing workforce.

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