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The Effect of Role Stress on Employee Performance: The Mediating Role of Role Clarity and the Moderating Role of Total Quality Management (TQM) among Project-Based Employees

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Abstract: This study examines the association between role stress and employee performance among project-based employees in Greater Jakarta, with role clarity as a mediator and total quality management (TQM) as a moderator. A cross-sectional survey of 170 project-based employees, recruited through purposive and snowball sampling, was analyzed using PLS-SEM in SmartPLS. Role stress was negatively associated with role clarity and performance, while role clarity was positively associated with performance. The indirect path from role stress to performance through role clarity was significant (β = -0.087, p = 0.003), consistent with partial mediation in the statistical sense. TQM was positively associated with performance as a direct predictor in the model (β = 0.474), whereas the interaction effect (Role Stress × TQM) was not significant. Because the data are self-reported, non-probability, and cross-sectional, the findings indicate associations rather than causal effects.

Keywords: Role stress; Role clarity; Total quality management; Employee performance; Project-based employees..

1. INTRODUCTION

Increasing competition and changing organizational needs have encouraged flexible work arrangements, including project-based employment. Unlike routine work, project-based roles are shaped by project objectives, duration, workload, and specific requirements (Samimi, 2023). Employees must adapt to these demands across project phases while coordinating with different functions and stakeholders, potentially creating overlapping tasks, shifting responsibilities, and unclear expectations. This makes role clarity important for carrying out their work (Silvius-Zuchi & Silvius, 2024).

Work-related pressure remains a challenge. The State of the Global Workplace 2024 report indicates that approximately 16% of workers in Indonesia experienced daily stress (Gallup, 2024). The August 2025 National Labour Force Survey (Survei Angkatan Kerja Nasional [Sakernas]) reported that 25.47% of employed Indonesians worked more than 49 hours per week, including 28.50% of men and 20.91% of women (Statistics Indonesia [BPS], 2026, p. 15). These figures describe general work conditions rather than role stress among project-based employees in Greater Jakarta. Tight deadlines, changing requirements, and coordination with multiple stakeholders may contribute to role pressure, but this relationship requires empirical examination in the study population.

Projects often involve changing requirements and multiple stakeholders (Samimi, 2023). The Pulse of the Profession® 2025 report found that 18% of project professionals had high

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business acumen, 66% moderate, and 16% low, with project failure rates of 8% and 11% among the high- and low-acumen groups, respectively (Project Management Institute [PMI], 2025). These results provide general context for the complexity and performance demands of project environments. They do not directly establish role stress or the effects of role clarity and total quality management among project-based employees in Greater Jakarta.

Employee performance reflects work outcomes and may be affected by role stress when employees face difficult demands. Role conflict refers to competing demands, whereas role ambiguity involves insufficient information about expected responsibilities (Rizzo et al., 1970). Role overload occurs when demands exceed available time, energy, or ability (Tang & Vandenberghe, 2021). Such conflicting, unclear, or excessive expectations are particularly relevant when employees work across project teams. Tang and Vandenberghe (2021) found that role overload can increase psychological strain and negatively affect work performance.

The relationship between role stress and performance may also involve role clarity, defined as employees' understanding of their objectives, responsibilities, authority, and work procedures (Sawyer, 1992). Asamani et al. (2025) found an association between role clarity and employee performance. In project-based settings, knowing task boundaries and expected outcomes may help employees work effectively despite changing demands. Accordingly, this study examines role clarity as a mediating variable in the role stress–performance relationship.

Total Quality Management (TQM) is examined as a moderating variable. TQM emphasizes employee involvement, quality, and continuous improvement (Flynn et al., 1994). Fitriyani et al. (2021) found a positive relationship between TQM and business performance in Indonesia's pharmaceutical industry. In project-based work, clear standards and continuous process improvement may support coordination and help employees manage changing work demands. This study therefore examines whether TQM moderates the relationship between role stress and employee performance.

Previous studies have examined these relationships through different mechanisms and contexts. Tang and Vandenberghe (2021) studied role overload and performance through psychological strain; Asamani et al. (2025) linked role clarity with performance; and Fitriyani et al. (2021) associated TQM with business performance. Unlike studies examining these factors separately, the present study tests role clarity as a mediator and TQM as a moderator of the same role stress–performance relationship within a single model. This approach is relevant in project-based work, where roles and quality standards may change across projects and stakeholders (Samimi, 2023; Silvius-Zuchi & Silvius, 2024). By combining these pathways, the model examines both a potential indirect association through employees' understanding of

their roles and whether organizational quality practices buffer work pressure. Its contribution is to test whether TQM conditions this relationship, including the possibility of a non-significant interaction, rather than claiming novelty based on a new sample location.

Studies integrating these mediation and moderation mechanisms among project-based employees in Greater Jakarta were limited in the literature reviewed. This study therefore examines whether role clarity helps explain the role stress–performance association and whether TQM changes its strength in this context.

Specifically, this study tests the association of role stress with role clarity (H1), role clarity with performance (H2), and role stress with performance (H3), as well as mediation through role clarity (H4) and moderation by TQM (H5). These hypotheses are grounded in Role Theory and developed in the literature review. Because the data are cross-sectional, the findings indicate statistical associations rather than causal effects.

2. LITERATURE REVIEW

Theoretical Foundation

Role Theory (Kahn et al., 1964; Rizzo et al., 1970) explains that employees respond to expectations from supervisors, coworkers, clients, and organizations. Conflicting, unclear, or excessive demands can produce role stress, particularly in project-based work with changing targets and stakeholders (Dodanwala et al., 2022). In this study, role stress comprises role conflict, role ambiguity, and role overload (Table 1).

Role ambiguity concerns uncertainty about duties, authority, and procedures (Rizzo et al., 1970), whereas role clarity concerns employees' understanding of work objectives, responsibilities, and procedures (Sawyer, 1992). Role clarity is proposed as a mediator linking role stress to employee performance in project-based settings. Although related, role ambiguity and role clarity are treated as distinct constructs: ambiguity is one source of role stress, while clarity reflects understanding of goals, responsibilities, and expected outcomes (Kahn et al., 1964; Sawyer, 1992). Their conceptual proximity may create item-content overlap, especially for H1 and H4; the relevant items (RS1–RS3 and RC1–RC3) are reported in Appendix A. As the data are cross-sectional, the reverse association—lower clarity accompanying higher perceived stress cannot be excluded. TQM provides the organizational perspective. Flynn et al. (1994) emphasize management support, quality information, feedback, and workforce involvement. Such practices can structure project coordination and performance standards. Supportive management may buffer work pressure (Meunier et al., 2022), while quality practices have been associated with project

performance through coordination and communication (Shah et al., 2022). Accordingly, TQM is proposed as a moderator of the role stress–performance relationship.

Role Stress and Role Clarity

Role clarity is the extent to which employees understand their work goals, responsibilities, authority, procedures, and expected outcomes (Kahn et al., 1964; Sawyer, 1992; Asamani et al., 2025). This study identifies three conceptual facets: objective clarity, responsibility clarity, and expectation clarity, informed by Sawyer (1992), Kahn et al. (1964), and Burr et al. (2019). These facets describe the construct rather than separate questionnaire-based subconstructs.

Role stress may undermine that understanding. Selvakumar and Nagasubramaniyan (2025) reported a significant relationship between role stress and role clarity; Verlinden et al. (2023) linked complex workplace change to reduced clarity, and Zettna et al. (2025) emphasized supportive work conditions. This evidence supports the following expectation:
H1: Role stress is negatively associated with role clarity among project-based employees.

Role Clarity and Employee Performance

Bernardin and Russell (1998) define employee performance through work outcomes over a specified period. Here, performance is employees' self-reported assessment of their current or most recent project. Its six indicators (EP1–EP6; Table 1) are conceptually grouped into work quality (quality and interpersonal impact), task completion (timeliness and quantity), and work effectiveness (cost effectiveness and need for supervision). The estimated model treats all six as indicators of one first-order reflective construct, not three separate dimensions.

Clear expectations and responsibilities can support task execution. Asamani et al. (2025), Genov and Tair (2025), Priyanto et al. (2025), and Sturma and Kelleher (2021) report relationships between role clarity and employee performance or related work outcomes. Thus, the proposed association is positive:
H2: Role clarity is positively associated with employee performance among project-based employees.

Role Stress and Employee Performance

Conflicting, excessive, or unclear role demands may drain employees' resources and impair performance. Studies by Rachma and Sunaryo (2022), Ismayanti et al. (2024), Syah et al. (2024), and Zahda et al. (2024) report negative relationships involving role stress, work stress, or role ambiguity and performance. Although terminology differs, these findings inform the expected direct relationship in project-based work:

H3: Role stress is directly and negatively associated with employee performance among project-based employees.

The Mediating Role of Role Clarity in the Relationship between Role Stress and Employee Performance

Role clarity may explain part of the association between role stress and performance: greater role stress is expected to accompany lower role clarity, which is in turn associated with poorer performance. This is examined as a statistical indirect path, not a causal sequence.

Selvakumar and Nagasubramaniyan (2025) examined mediation involving role clarity and role stress. Gong and Popescu (2025) and Priyanto et al. (2025) also link role clarity to relevant work outcomes, although their models do not directly test the full role stress–clarity–performance pathway. These studies support testing the proposed mediation:

H4: Role clarity mediates the relationship between role stress and employee performance, such that role stress has a negative indirect association with performance through lower role clarity (a statistical indirect path) among project-based employees.

The Moderating Role of Total Quality Management (TQM) in the Relationship between Role Stress and Employee Performance

TQM comprises practices that promote systematic quality management and coordination (Flynn et al., 1994; Shah et al., 2022; Afzal et al., 2022). The study operationalizes TQM through five aspects (Table 1): top management commitment, customer focus, workforce focus, training, and operational focus. They extend Flynn et al.'s framework of management support and employee participation. TQM is measured from respondents' perceptions, not through an external audit of organizational practices.

Standards, monitoring, and continuous improvement may help employees manage role pressure. Octarina and Ardana (2022), Kartini and Nugroho (2025), and Harahap and Qarni (2025) provide supporting evidence concerning work environments or organizational support, rather than direct tests of TQM moderation. TQM is therefore expected to weaken the negative role stress–performance association:

H5: Total Quality Management (TQM) moderates the relationship between role stress and employee performance, such that the negative association between role stress and performance is weaker at higher levels of TQM (a positive Role Stress × TQM interaction, with both variables scored so that higher values mean more role stress and more TQM) among project-based employees.

Figure 1 summarizes H1–H3 (direct paths), H4 (the indirect path through role clarity), and H5 (the Role Stress × TQM interaction). The direct TQM–performance path is estimated as part of the interaction model but is not a separate hypothesis.

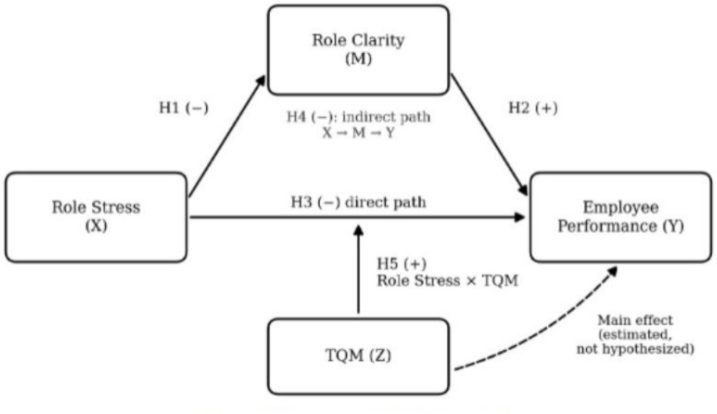


Figure 1. Conceptual Framework.

3. RESEARCH METHOD

This study employed a quantitative approach using a survey method. This approach was selected because the study aims to test relationships among variables using data obtained from respondents through a questionnaire. The collected data were analyzed statistically using Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the relationships among variables in the research model (Hair et al., 2022).

The study examines the association between role stress and employee performance, with role clarity as a mediating variable and total quality management (TQM) as a moderating variable. Accordingly, the study uses a cross-sectional associative design incorporating mediation and moderation. All variables were measured with one questionnaire completed once by each respondent, so the design does not establish temporal order or causal identification. The mediation is therefore evaluated as a statistical indirect path (role stress → role clarity → performance), not as evidence of a causal mechanism, and other orderings are possible, for example low role clarity increasing perceived role stress, or performance influencing perceptions of stress. TQM is used to examine whether quality management conditions are associated with the strength of the role stress–performance relationship (Hair et al., 2022).

The research participants were employees working under project-based arrangements in the Greater Jakarta area. The population size was not known with certainty because project-based employees are distributed across various companies, sectors, and projects. The study

used non-probability sampling through purposive sampling and snowball sampling. Respondent criteria included being an active employee working under a project-based arrangement, working or residing in the Greater Jakarta area, having at least six months of work experience on a current project or on a project completed within the previous year, and being willing to complete the questionnaire in full. Because working or residing in the Greater Jakarta area does not necessarily mean working on projects in that area, the project-based arrangement criterion was the decisive eligibility criterion, and all eligibility criteria were self-reported by respondents in the questionnaire. The findings therefore apply to this self-selected sample and should not be generalized to all project-based workers in Greater Jakarta.

The final sample comprised 170 respondents. The research model contained 17 indicators: 3 indicators of role stress, 3 indicators of role clarity, 6 indicators of employee performance, and 5 indicators of total quality management (TQM). The sample was used to estimate the PLS-SEM model that simultaneously examined direct, mediating, and moderating relationships. The largest number of structural paths pointing at one construct is four (role stress, role clarity, TQM, and the Role Stress × TQM interaction predicting employee performance). The ability of a sample of this size to detect a small interaction effect is limited, and this is taken into account when interpreting the result for H5. A post hoc sensitivity calculation for a regression with four predictors ($\alpha = 0.05$; noncentral F distribution, the procedure implemented in G*Power for multiple regression) indicates that $n = 170$ gives power of about 0.99 to detect a medium effect ($f^2 = 0.15$) and about 0.92 for $f^2 = 0.10$, but only about 0.62 for $f^2 = 0.05$ and 0.27 for $f^2 = 0.02$; a medium effect would require at least 85 respondents for a power of 0.80. The sample size is therefore adequate for medium-sized structural paths but not for detecting a very small interaction effect.

Data were collected using a questionnaire developed from the indicators of each research variable. The questionnaire was distributed online through Google Forms to project-based employees in Greater Jakarta via social media. Respondents were initially selected using purposive sampling based on predetermined criteria and then expanded through snowball sampling using recommendations or networks of respondents who met the criteria. A questionnaire was used as the primary instrument because it allows structured data collection with standardized response options, facilitating data processing and analysis. The study used a five-point Likert scale: 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Neutral (N), 4 = Agree (A), and 5 = Strongly Agree (SA). All constructs, including employee performance, were reported by the same respondent at the same time (self-report), so common method bias cannot be excluded; Cronbach's alpha, composite reliability, and HTMT assess measurement

quality and discrimination among constructs and are not evidence that common method bias is absent. Because respondents were recruited partly through snowball sampling, respondents who share the same networks, organizations, or projects may not be independent of one another, and the sample is not representative.

Table 1. Operational Definitions of Variables

Variable	Operational Definition	Indicator	Source	Scale
Role Stress (X)	A psychological condition arising from a mismatch between role demands and the individual's capacity or clarity of work expectations.	1. Role conflict 2. Role ambiguity; 3. Role overload	Rizzo, House, & Lirtzman (1970); Tang & Vandenberghe (2021).	Likert 1–5
Role Clarity (M - Mediator)	The degree to which employees understand their roles, responsibilities, procedures, and performance expectations.	1 Objective Clarity 2. Responsibility Clarity; 3. Expectation Clarity	Sawyer (1992); (Burr et al., 2019)	Likert 1–5
Employee Performance (Y)	Individual work outcomes, in terms of both quality and quantity, in accordance with organizational standards and targets.	1. Quality 2. Quantity 3. Timeliness 4. Cost-effectiveness 5. Need for supervision 6. Interpersonal impact	Bernardin & Russell (1998)	Likert 1–5
Total Quality Management (Z - Moderator)	Comprehensive application of management commitment, workforce involvement, and consistent process improvement principles to enhance project performance.	1. Top management Commitment 2. Customer Focus 3. Workforce Focus 4. Training 5. Operational Focus	Flynn, Schroeder, & Sakakibara (1994); Afzal et al., (2022)	Likert 1–5

Source: Adapted from the instruments and sources used in the research manuscript, 2026

As shown in Table 1, this study uses a total of 17 indicators, consisting of 3 indicators for Role Stress, 3 indicators for Role Clarity, 6 indicators for Employee Performance, and 5 indicators for Total Quality Management (TQM). All indicators used a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). Each indicator represents a single questionnaire item; the full item wording, scoring procedures, and reverse-coding details are provided in Appendix A. Each construct is specified in the estimated model as a first-order reflective construct (Tables 4–7); the dimensions named in Table 1 represent conceptual facets rather than separately estimated higher-order subconstructs. The evaluation criteria applied below (outer loadings, AVE, Cronbach's alpha, and composite reliability) are appropriate for reflective measurement models, whereas different criteria would be required for multidimensional composite models.

The collected data were analyzed using descriptive statistics to describe respondent characteristics and response tendencies for each variable. Hypothesis testing was conducted using Structural Equation Modeling with the Partial Least Squares approach (PLS-SEM) through SmartPLS version 3.2.9 (Ringle et al., 2015). PLS-SEM was selected because it is

suitable for testing models that simultaneously involve mediation and moderation and because of its predictive capabilities.

Evaluation of the measurement model included convergent validity through outer loadings (> 0.70) and Average Variance Extracted/AVE (> 0.50), discriminant validity through the Heterotrait-Monotrait Ratio/HTMT (< 0.90), and reliability through Cronbach's Alpha and Composite Reliability (> 0.70).

Evaluation of the structural model included R-Square (R^2), Q-Square (Q^2), F-Square (F^2), and path coefficients. Mediation and moderation were tested through bootstrapping in SmartPLS using 5,000 subsamples. The random seed was not recorded, so repeated bootstrap runs may yield slightly different estimates. A relationship was considered statistically significant when the p-value was below 0.05 based on a two-tailed test (corresponding to a critical t-value of >1.96). Confidence intervals (95%) were obtained using the percentile bootstrap method.

The Role Stress × TQM interaction term was created using the two-stage approach: the latent variable scores of Role Stress and TQM were first estimated in the main-effects model, and their product was then used as the interaction term in the structural model (Hair et al., 2022). The structural model specification includes all direct paths (Role stress → Role Clarity; Role Stress, Role Clarity and TQM → Employee Performance), the indirect path through Role Clarity, and the interaction term (Role Stress × TQM → Employee Performance), as illustrated in Figure 1. Potential collinearity among predictors in the structural model was assessed using inner VIF values.

4. RESULTS AND DISCUSSION

Research Results

Respondent Characteristics

This study used data obtained from 170 project-based employees working in the Greater Jakarta area. Data were collected through an online questionnaire (Google Forms) distributed via social media using purposive sampling and subsequently expanded through snowball sampling. All respondents (170 people or 100%) reported working in organizations that apply project-based work systems and being located in the Greater Jakarta area. Therefore, all collected data met the respondent criteria specified in the method and were eligible for further analysis. The complete demographic characteristics of the respondents are presented in Table 2.

Table 2. Demographic Characteristics of Respondents (n = 170)

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	88	51.8
	Female	82	48.2
Age	< 25 years	43	25.3
	25–34 years	87	51.2
	35–44 years	32	18.8
	≥ 45 years	8	4.7
Highest Education	Senior High School/Vocational High School or equivalent	50	29.4
	Diploma (D1/D2/D3)	6	3.5
	Bachelor's Degree (D4/S1)	105	61.8
	Postgraduate (S2/S3)	9	5.3
Tenure in Current Position/Project	< 1 year	25	14.7
	1–3 years	62	36.5
	>3–5 years	60	35.3
	> 5 years	23	13.5
Project Sector/Industry	IT/Technology	25	14.7
	Construction/Engineering	43	25.3
	Consulting	38	22.4
	Creative Industries, Media & Marketing	64	37.6

Source: Primary data processed, 2026

Table 2 shows that the respondents were relatively balanced by gender, with a slight predominance of men (51.8%). In terms of age, most respondents were 25–34 years old (51.2%), indicating that the sample was dominated by employees in the early to middle stages of their careers. Respondents were predominantly bachelor's degree holders (61.8%), suggesting that most had higher-education backgrounds consistent with project-based work, which commonly requires specific technical and managerial competencies. Regarding tenure in the current position or project, most respondents had worked for 1–3 years (36.5%) or >3–5 years (35.3%). This indicates that most respondents had sufficient experience on ongoing or recently completed projects to provide relevant assessments of the research variables. By sector or industry, the largest proportion of respondents worked in Creative Industries, Media & Marketing (37.6%), followed by Construction/Engineering (25.3%), Consulting (22.4%), and IT/Technology (14.7%). These figures show that the data represent a range of project-based work sectors in Greater Jakarta.

Descriptive Statistics

Descriptive statistical analysis was used to provide an overview of respondents' response tendencies for each research variable: Role Stress (X), Role Clarity (M), Total Quality

Management/TQM (Z), and Employee Performance (Y). The mean score of each variable was categorized using five-point Likert intervals: 1.00–1.80 (Strongly Disagree), 1.81–2.60 (Disagree), 2.61–3.40 (Neutral), 3.41–4.20 (Agree), and 4.21–5.00 (Strongly Agree). The descriptive statistical results are presented in Table 3.

Table 3. Descriptive Statistics of Research Variables

Variable	Mean	Std. Deviation	Min	Max	Category
Role Stress (X)	2.98	0.73	1.00	4.67	Neutral
Role Clarity (M)	3.11	0.74	1.00	5.00	Neutral
Total Quality Management (Z)	3.17	0.76	1.20	5.00	Neutral
Employee Performance (Y)	3.23	0.80	1.33	4.83	Neutral

Source: Primary data processed, 2026

As shown in Table 3, the mean scores of all four research variables fell within the Neutral interval (2.61–3.40). This label describes the interval of the mean response on a five-point agreement scale; it is not a diagnosis of the level of stress or an objective standard of performance quality. Role Stress had the lowest mean score (2.98), meaning that respondents' average agreement with the role stress statements was near the midpoint of the scale. Role Clarity (mean = 3.11) and Total Quality Management (mean = 3.17) likewise showed average agreement near the midpoint, below the Agree interval (3.41–4.20). Employee Performance had the highest mean score (3.23), indicating that respondents' average self-rated agreement with the performance statements was also near the midpoint. Because the interpretation of these means depends on the specific content of the items, they are interpreted as general tendencies of agreement among respondents, rather than as evidence that organizational conditions are adequate or that performance is objectively good.

Measurement Model Evaluation (Outer Model)

The measurement model (outer model) was evaluated to assess the adequacy of the indicators in measuring their respective latent constructs. The evaluation comprised convergent validity, discriminant validity, and reliability tests.

Convergent validity was assessed using outer loading and Average Variance Extracted (AVE). An indicator was considered valid when its outer loading exceeded 0.70, while a construct was considered to have adequate convergent validity when its AVE exceeded 0.50. The outer loading results are presented in Table 4.

Table 4. Outer Loading Test Results

Variable	Indicator	Outer Loading	Result
Role Stress (X)	RS1	0.786	Valid
	RS2	0.794	Valid
	RS3	0.822	Valid
Role Clarity (M)	RC1	0.821	Valid
	RC2	0.844	Valid

	RC3	0.786	Valid
Total Quality Management (Z)	TQM1	0.778	Valid
	TQM2	0.836	Valid
	TQM3	0.768	Valid
	TQM4	0.780	Valid
	TQM5	0.844	Valid
Employee Performance (Y)	KK1	0.823	Valid
	KK2	0.824	Valid
	KK3	0.780	Valid
	KK4	0.803	Valid
	KK5	0.834	Valid
	KK6	0.842	Valid

(Source: SmartPLS Output, 2026)

Table 4 shows that all indicators for the four research variables had outer loading values above 0.70. Therefore, all indicators were considered valid and appropriate for measuring their respective latent constructs, and no indicators needed to be eliminated.

The Average Variance Extracted (AVE) results at the construct level are presented in Table 5.

Table 5. Average Variance Extracted (AVE) Test Results

Construct	AVE	Result
Role Stress	0.641	Valid
Role Clarity	0.668	Valid
Total Quality Management	0.643	Valid
Employee Performance	0.669	Valid

(Source: SmartPLS Output, 2026)

As shown in Table 5, all constructs had AVE values above 0.50, ranging from 0.641 to 0.669. This indicates that each construct explained more than 50% of the variance in its indicators. Accordingly, all constructs in this study met the requirement for convergent validity.

Discriminant validity was assessed using the Heterotrait-Monotrait Ratio (HTMT), with a threshold below 0.90. The HTMT results are presented in Table 6.

Table 6. Discriminant Validity Test Results (HTMT)

Construct	Employee Performance	Role Clarity	Role Stress	TQM
Employee Performance	-			
Role Clarity	0.637	-		
Role Stress	0.374	0.481	-	
Total Quality Management	0.586	0.465	0.201	-

(Source: SmartPLS Output, 2026)

Table 6 shows that all HTMT values between constructs were below the 0.90 threshold, with the highest value being 0.637 between Employee Performance and Role Clarity. These results provide empirical support for the discriminant validity of the measurement model as specified, indicating that the four constructs (Role Stress, Role Clarity, Total Quality Management, and Employee Performance) are distinguishable by the HTMT criterion. Confidence intervals for HTMT were not computed, so this assessment relies on the HTMT point estimates. However, meeting the HTMT criterion does not replace the conceptual

argument for separating role stress (which includes a role ambiguity indicator) from role clarity, and an assessment of item content overlap remains essential.

Reliability was assessed using Cronbach's Alpha and Composite Reliability (CR), both of which were required to exceed 0.70. The reliability results are presented in Table 7.

Table 7. Construct Reliability Test Results

Construct	Cronbach's Alpha	Composite Reliability	Result
Role Stress	0.725	0.843	Reliable
Role Clarity	0.751	0.858	Reliable
Total Quality Management	0.861	0.900	Reliable
Employee Performance	0.901	0.924	Reliable

(Source: SmartPLS Output, 2026)

Table 7 shows that all constructs had Cronbach's Alpha and Composite Reliability values above 0.70. Therefore, all constructs were considered reliable and demonstrated good internal consistency. Overall, the measurement model met the validity and reliability requirements and could be evaluated further through the structural model (inner model).

Structural Model Evaluation (Inner Model)

The structural model (inner model) was evaluated to assess the model's ability to explain and predict relationships among the research variables. Collinearity among the predictors was assessed first using inner VIF values, which ranged from 1.000 to 1.522 and were below 3, the conservative guideline in Hair et al. (2022), indicating that collinearity was not a concern. The evaluation then included R-Square (R^2), Q-Square (Q^2), and F-Square (F^2).

R-Square was used to measure the proportion of variance in the endogenous variables explained by the exogenous variables in the model. The R-Square results are presented in Table 8.

Table 8. R-Square Test Results

Endogenous Variable	R Square	R Square Adjusted	Category
Role Clarity	0.133	0.128	Weak
Employee Performance	0.462	0.449	Moderate

(Source: SmartPLS Output, 2026)

Table 8 shows that the R-Square value for Role Clarity was 0.133, indicating that Role Stress accounted for 13.3% of the variance in Role Clarity in this sample; therefore, the explanatory power of this path was below the 0.25 benchmark for weak explanatory power proposed by Hair et al. (2022). The R-Square value for Employee Performance was 0.462, indicating that Role Stress, Role Clarity, TQM, and the Role Stress × TQM interaction together accounted for 46.2% of the variance in Employee Performance in this sample, which lies between the weak (0.25) and moderate (0.50) benchmarks of Hair et al. (2022). R-Square describes the proportion of variance explained in the sample and is not a percentage of causal

influence. The remaining 53.8% of the variance in Employee Performance is unexplained variance, which includes measurement error and factors not included in the model; it cannot be attributed entirely to identified outside factors. Q-Square was used to assess the predictive relevance of the model for the endogenous constructs. A Q-Square value greater than 0 indicates predictive relevance. The Q-Square results are presented in Table 9.

Table 9. Q-Square Test Results

Endogenous Variable	SSO	SSE	Q^2 (= 1 - SSE/SSO)	Result
Role Clarity	510.000	470.291	0.078	Good predictive relevance
Employee Performance	1020.000	715.558	0.298	Good predictive relevance

(Source: SmartPLS Output, 2026)

Table 9 shows that the Q-Square values for Role Clarity (0.078) and Employee Performance (0.298) were both greater than 0. These results demonstrate that the model has predictive relevance for both endogenous constructs, with stronger predictive capability for Employee Performance than for Role Clarity.

F-Square was used to measure the contribution of each exogenous variable to an endogenous variable when the exogenous variable is removed from the model. The F-Square results are presented in Table 10.

Table 10. F-Square Test Results

Path	F Square	Category
Role Stress → Role Clarity	0.154	Moderate
Role Stress → Employee Performance	0.119	Small–Moderate
Role Clarity → Employee Performance	0.069	Small
Total Quality Management → Employee Performance	0.315	Large
Role Stress × TQM → Employee Performance	0.000	No contribution

(Source: SmartPLS Output, 2026)

Table 10 shows that Total Quality Management made the largest contribution to Employee Performance ($F^2 = 0.315$, a medium effect size using Cohen's thresholds of 0.02, 0.15, and 0.35 for small, medium, and large), followed by Role Stress to Role Clarity ($F^2 = 0.154$, medium) and Role Stress to Employee Performance ($F^2 = 0.119$, small). Role Clarity made a small contribution to Employee Performance ($F^2 = 0.069$), while the Role Stress × TQM interaction made a negligible contribution ($F^2 = 0.000$ when rounded to three decimal places), indicating a very small contribution not an exactly zero effect.

Hypothesis Testing

Hypotheses were tested through a bootstrapping procedure with 5,000 subsamples in SmartPLS. A hypothesis was considered supported when the estimate was in the hypothesized direction and the p-value was below 0.05 (two-tailed). The hypothesis testing results are presented in Table 11.

Table 11. Hypothesis Testing Results

Hypothesis	Path	Path Coefficient	T-Statistic	P-Value	Result
H1	Role Stress → Role Clarity	-0.365	5.187	< 0.001	Supported
H2	Role Clarity → Employee Performance	0.238	3.935	< 0.001	Supported
H3	Role Stress → Employee Performance	-0.292	4.252	< 0.001	Supported
H4	Role Stress → Role Clarity → Employee Performance (mediation)	-0.087	2.979	0.003	Supported
H5	Role Stress × TQM → Employee Performance (moderation)	-0.009	0.178	0.859	Not Supported

(Source: SmartPLS Output (Bootstrapping, 5,000 subsamples), 2026)

In addition, the direct path from Total Quality Management to Employee Performance, which is a component of the estimated interaction model but not one of the study's hypotheses, was positive and statistically significant (path coefficient = 0.474; t-statistic = 8.971; $p < 0.001$). This path was not formulated as a hypothesis and is reported as a main-effect component of the model, not a post hoc hypothesis. The finding indicates that, in this sample, TQM was associated with employee performance, independently of its role as a moderator in the Role Stress–Employee Performance relationship tested in H5.

Discussion

The Association between Role Stress and Role Clarity (H1)

The results show that Role Stress was negatively and significantly related to Role Clarity (path coefficient = -0.365; t-statistic = 5.187; $p < 0.001$), supporting H1. This means that higher role stress among project-based employees is associated with lower perceived role clarity. The finding is consistent with Rizzo et al. (1970), who identify role ambiguity as a major source of role pressure, and with Selvakumar and Nagasubramaniyan (2025), who found a significant relationship between role stress and role clarity. It also supports Verlinden et al. (2023), who showed that complex workplace changes can reduce role clarity, and is relevant to Zettna et al. (2025), who emphasized the importance of environmental support in shaping role clarity. In the context of project-based employees, pressure arising from role conflict, unclear information, and excessive workload was accompanied by lower perceived clarity of work objectives, responsibilities, and expected outcomes. Because role stress in this study includes a role ambiguity indicator, part of this relationship may reflect conceptual overlap between the two constructs, and because the data are cross-sectional the direction cannot be definitively established; lower role clarity may also increase perceived role stress.

The Association between Role Clarity and Employee Performance (H2)

The results show that Role Clarity was positively and significantly related to Employee Performance (path coefficient = 0.238; t-statistic = 3.935; $p < 0.001$), supporting H2. This means that greater role clarity is associated with better employee performance. The finding is

consistent with Sawyer (1992), who emphasized that understanding the objectives, processes, and expected outcomes of a role supports individual work effectiveness. It is also consistent with Genov and Tair (2025), Priyanto et al. (2025), and Sturma and Kelleher (2021), who reported positive relationship between role clarity and employee performance in various organizational contexts. For project-based employees, clarity regarding project objectives, responsibility boundaries, and expected outputs is particularly important because work often involves multiple parties and changing conditions across projects. Role clarity therefore represents an important factor in supporting performance achievement.

The Direct Association between Role Stress and Employee Performance (H3)

The results show that Role Stress had a negative and significant direct path to Employee Performance (path coefficient = -0.292; t-statistic = 4.252; $p < 0.001$), supporting H3. This means that higher role stress was associated with lower employee performance, over and above the portion of the association that runs through role clarity. The finding is consistent with Ismayanti et al. (2024), Syah et al. (2024), and Zahda et al. (2024), who showed that role stress, work stress, and role ambiguity are negatively associated with employee performance. The result is also consistent with Tang and Vandenberghe's (2021) argument that role pressure can deplete individuals' psychological resources and ultimately reduce the quality of work outcomes. In project-based work, where employees are structurally vulnerable to role conflict, ambiguity, and workload across multiple projects, role stress was directly associated with performance, although the practical size of this path was small.

The Mediating Role of Role Clarity in the Relationship between Role Stress and Employee Performance (H4)

The indirect-effect results show that Role Clarity statistically mediated the relationship between Role Stress and Employee Performance (indirect coefficient = -0.087; 95% CI [-0.159, -0.035]; t-statistic = 2.979; $p = 0.003$), supporting H4. This value is consistent with the product of the two component paths ($-0.365 \times 0.238 = -0.087$). Because the direct path from Role Stress to Employee Performance (H3) was also negative and statistically significant ($\beta = -0.292$; 95% CI [-0.434, -0.151]; $t = 4.252$; $p < 0.001$), yielding a total effect of -0.378 (95% CI [-0.494, -0.268]), the pattern corresponds to partial (complementary) mediation in the statistical sense. The model shows both a direct negative path and an indirect negative path through lower Role Clarity. This finding is consistent with the mediating role of role clarity reported by Selvakumar and Nagasubramaniyan (2025) and with the arguments of Gong and Popescu (2025) and Priyanto et al. (2025) on the importance of role clarity for work outcomes, the latter two studies examined related models and are not direct tests of the role stress-role clarity-performance

model. The result is compatible with the role theory mechanism of Kahn et al. (1964) and Rizzo et al. (1970) but a single cross-sectional survey cannot confirm a causal mechanism.

The Moderating Role of Total Quality Management in the Relationship between Role Stress and Employee Performance (H5)

The results show that the Role Stress × TQM interaction was not significantly related to Employee Performance (coefficient = -0.009; 95% CI [-0.127, 0.084]; t-statistic = 0.178; p = 0.859), and H5 was therefore not supported. This finding contrasts with the initial argument that TQM could function as a buffer that weakens the negative effect of role stress on performance, based on the framework of Flynn et al. (1994), the findings of Meunier et al. (2022) regarding supportive management practices as a buffer against work pressure, and the findings of Octarina and Ardana (2022), Kartini and Nugroho (2025), and Harahap and Qarni (2025) concerning the role of the work environment in the relationship between stress and performance. The non-significant interaction (coefficient = -0.009) means that no moderating effect was detected in this sample, however, it does not prove that TQM never moderates the relationship between role stress and performance in other contexts. The sample size (n = 170) and the measurement of TQM through five perception-based indicators may have restricted the statistical power to detect a small interaction effect (see the sensitivity analysis in the Research Method section).

Nevertheless, TQM was significantly and positively related to Employee Performance as a direct predictor in the estimated model (path coefficient = 0.474; 95% CI [0.366, 0.584]; t-statistic = 8.971; $p < 0.001$; $F^2 = 0.315$, medium effect size), consistent with Fitriyani et al. (2021) and Yudistria et al. (2025) regarding the positive role of TQM in performance. This finding indicates that, among the project-based employees in this sample, TQM was associated with performance mainly as a direct driver (main effect) rather than as a factor that changes the strength of the relationship between role stress and employee performance (moderating effect). One possible explanation, which was not tested in this study, is that TQM systems in project-based organizations tend to be implemented consistently across team members without differentiating the level of role pressure experienced by each individual, so that their association with performance does not depend on the degree of role stress, this is a conjecture and not a finding about the sample. In addition, the TQM aspects measured in this study (top management commitment, customer focus, workforce focus, training, and operational focus) may be more closely associated with general work standards and procedures than with mechanisms specifically designed to respond to individual psychological conditions arising from role pressure.

5. CONCLUSION

The results show that, in this cross-sectional sample of project-based employees in Greater Jakarta, higher role stress was associated with lower role clarity and lower employee performance, both directly and through an indirect path via role clarity, consistent with partial mediation in the statistical sense. Role clarity was positively associated with performance, which is consistent with the role theory underpinning the study. The Role Stress × TQM interaction was not statistically significant, so no moderating effect of TQM was detected in this sample, although TQM was positively associated with employee performance as a direct predictor. These findings suggest, as a proposition to be tested further, that efforts to improve the performance of project-based employees may benefit from attention to managing role pressure and strengthening role clarity, while TQM may support performance independently of role stress.

However, these conclusions should be interpreted in light of several limitations, including the non-probability sampling, cross-sectional design, self-reported data, cross-sectoral heterogeneity, potential conceptual overlaps among role construct items, and remaining statistical uncertainty regarding interaction effects. Future research should employ longitudinal designs, multi-source data (e.g., supervisor-rated performance), or intervention studies to more rigorously test these causal mechanisms and proposed managerial practices..

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