



CAREER GROWTH AND WORK ENVIRONMENT IN REDUCING TURNOVER INTENTION: THE MEDIATING ROLE OF EMPLOYEE ENGAGEMENT

Rachel Veronica¹, Gogor Arif Handiwibowo*²
^{1,2}Institut Teknologi Sepuluh Nopember, Surabaya
Correspondence*: gogor@mmt.its.ac.id

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Abstract

This study aims to examine the effects of physical work environment, career growth, and family supportive organization on turnover intention, with employee engagement as a mediating variable among contract employees in a mining contractor company. Using a quantitative cross-sectional survey design, data were collected from 235 respondents selected through stratified sampling. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that physical work environment and career growth have positive and significant effects on employee engagement and negative effects on turnover intention. In contrast, family supportive organization does not show a meaningful effect on either employee engagement or turnover intention. Employee engagement is also found to partially mediate the relationships between physical work environment and turnover intention, as well as between career growth and turnover intention. Among the examined predictors, career growth emerges as the most dominant factor in reducing employees' intention to leave the organization. These findings indicate that strengthening career development opportunities and improving the quality of the physical work environment are critical for retaining contract employees in the mining sector. Theoretically, this study extends the application of social exchange theory by demonstrating the role of employee engagement as a psychological mechanism linking organizational practices to employee retention in a high-risk work setting.

Keywords: Career Growth; Employee Engagement; Turnover Intention; Physical Work Environment; Mining Industry

A. INTRODUCTION

Employee retention has become a critical concern for organizations operating in demanding and high-risk industries, particularly in the mining sector. Organizations invest substantial resources in recruiting, training, developing, and retaining employees. Therefore, the loss of skilled workers may generate significant consequences, not only in terms of replacement costs but also in relation to operational stability and organizational performance. Human resources are valuable organizational assets because their knowledge, skills, and work experience are intangible and difficult to imitate. In mining-related industries, these concerns become more complex due to harsh working conditions, long working hours, high job pressure, remote work locations, and exposure to occupational risks (Chadarisman et al., 2025).

In Indonesia, employee turnover in the mining sector has become an increasingly important managerial issue. Reports from several mining regions indicate that layoffs and workforce instability have been particularly evident in mining-related industries. In 2025, cases of employment termination in South Kalimantan, East Kalimantan, and South Sulawesi were largely dominated by workers in the mining sector (IKN-TIME, 2025; Fawdi & Zahira, 2025; Said, 2025). Although these reports mainly describe broader labor market conditions, they also reflect the vulnerability of employment stability in mining-related work environments. At the organizational level, PT. XXX, a company operating in mining contracting and heavy equipment rental, has also experienced employee turnover as a serious concern. The company employs professional workers across project sites and the head office, with core operations

highly dependent on skilled technical workers such as excavator operators, dump truck operators, and mechanics.

Internal organizational data indicate that the annual turnover rate at PT. XXX has reached approximately 10–15% over the last three years. This figure requires managerial attention because a turnover rate exceeding 10% may indicate a need for organizational evaluation and corrective action (Krismoko et al., 2024). More specifically, voluntary turnover is concentrated among highly skilled contract employees. A substantial proportion of employees who leave voluntarily are operators and mechanics, both of whom require specific technical skills, certifications, and work experience. For a mining contractor company, the loss of these workers can disrupt operational continuity, increase recruitment and training costs, and reduce the efficiency of project execution. This condition makes it essential to identify the organizational factors that shape employees' intention to leave.

Previous studies have shown that physical work environment and career growth are important predictors of employee attitudes and retention-related outcomes. A poor work environment, including inadequate facilities and insufficient safety support, may reduce employee comfort and productivity and increase the likelihood of turnover intention (William & Sundiman, 2025; Chadarisman et al., 2025). Conversely, a safe, supportive, and well-managed physical work environment may strengthen employees' positive perceptions of the organization and encourage them to remain. In addition, career growth has been identified as a crucial factor in retaining employees, particularly those with specialized expertise. Clear career development opportunities can enhance motivation, strengthen organizational attachment, and reduce employees' intention to leave (Haliansyah et al., 2024; Yu et al., 2025; Živković et al., 2024). Family supportive organization is also relevant, as organizational support for employees' family responsibilities may shape work attitudes by reducing work-family strain and enhancing perceived organizational care (Uddin et al., 2023; Li et al., 2025).

Theoretically, these relationships can be understood through social exchange theory. The theory argues that employment relationships are shaped by reciprocal exchanges between employees and organizations (Blau, 1964; Balogun et al., 2020). When employees perceive that the organization provides support, fairness, and meaningful resources, they are more likely to respond with positive work attitudes and behaviors. In this regard, employee engagement becomes an important psychological response that reflects employees' emotional, cognitive, and behavioral attachment to their work and organization (Saks, 2006; Kissi et al., 2024). Employees who are highly engaged tend to be more committed, more involved in their work, and less likely to consider leaving the organization.

Despite the growing literature on turnover intention, several gaps remain. First, prior studies have often examined physical work environment, career growth, or family supportive organization separately, rather than integrating them into a single model of turnover intention. Second, many studies have focused on direct relationships between organizational practices and turnover intention, while the psychological mechanism through which these practices reduce turnover intention remains less clearly explained. In particular, the mediating role of employee engagement in linking work environment and career growth to turnover intention requires further empirical examination. Third, evidence from mining contractor companies remains limited, even though this context is highly relevant due to its risk-intensive work environment, remote project sites, reliance on contract employees, and dependence on skilled technical labor. Finally, the effect of family supportive organization may vary across work contexts, especially in industries where employees work far from their families and face demanding work schedules. This makes further investigation necessary.

To address these gaps, this study develops and tests an empirical model based on social exchange theory. Specifically, it examines the effects of physical work environment, career

growth, and family supportive organization on turnover intention, while positioning employee engagement as a mediating mechanism. This study contributes to the literature in three ways. First, it provides a more integrated explanation of turnover intention by combining work environment, career growth, family support, and employee engagement in a single model. Second, it extends the application of social exchange theory by showing how employee engagement functions as a psychological mechanism linking organizational practices to retention outcomes in a high-risk work context. Third, it offers practical insights for mining contractor companies in designing more effective retention strategies, particularly through improving the physical work environment and strengthening career growth opportunities for contract employees.

B. LITERATURE REVIEW

1. Social Exchange Theory

Social exchange theory provides the theoretical foundation for explaining how organizational practices shape employee attitudes and behavioral intentions. The theory assumes that relationships between employees and organizations are built on reciprocal exchanges, in which employees respond to organizational treatment with corresponding attitudes and behaviors (Blau, 1964). When employees perceive that the organization provides fair treatment, adequate support, and valuable resources, they are more likely to reciprocate through stronger commitment, higher engagement, and lower intention to leave (Balogun et al., 2020; Iqbal et al., 2022).

In the context of this study, organizational practices are represented by physical work environment, career growth, and family supportive organization. These factors reflect different forms of organizational support: the provision of safe and adequate working conditions, opportunities for professional development, and support for employees' work-family needs. From a social exchange perspective, these practices may strengthen employees' psychological attachment to the organization. Employee engagement, therefore, becomes an important mechanism through which organizational support is translated into lower turnover intention (Saks, 2006).

2. Turnover Intention

Turnover intention refers to an employee's conscious intention to leave the current job and seek employment elsewhere. It is widely considered an important predictor of actual turnover because it captures the psychological process that precedes the decision to resign (Chen et al., 2021; Noe et al., 2024). In industries characterized by high work demands, turnover intention is particularly critical because losing skilled employees may disrupt operations and increase the costs of recruitment, training, and knowledge transfer.

From the perspective of social exchange theory, turnover intention may emerge when employees perceive an imbalance in their relationship with the organization. When employees believe that their contributions are not matched by adequate organizational support, they may psychologically withdraw and begin considering alternative employment. This is especially relevant in mining contractor companies, where employees often face demanding work conditions, remote project locations, and limited access to family and social support.

3. Physical Work Environment, Employee Engagement, and Turnover Intention

Physical work environment refers to the tangible conditions in which employees perform their work, including facilities, workspace layout, temperature, lighting, equipment, safety conditions, and other physical resources that support job performance (Anasi, 2020; Asriani & Riyanto, 2020; Judeh, 2021). In mining-related work settings, the physical work environment

is especially important because employees are exposed to physically demanding tasks, occupational risks, and geographically remote worksites.

A supportive physical work environment may increase employee engagement by creating a sense of safety, comfort, and organizational care. When employees perceive that the organization provides adequate working conditions, they are more likely to feel valued and to invest greater energy and dedication in their work. Previous studies have shown that a positive work environment can strengthen employee engagement and improve work-related attitudes (Indriyani & Meria, 2022; Judeh, 2021). Within social exchange theory, a safe and supportive work environment is interpreted as an organizational investment in employee well-being, which employees may reciprocate through higher engagement.

In contrast, poor physical working conditions may increase turnover intention. Inadequate facilities, unsafe work environments, and limited infrastructure can reduce employees' comfort and increase their desire to leave the organization. This argument is supported by studies showing that work environment is closely related to employees' intention to stay or leave (Indriyani & Meria, 2022; William & Sundiman, 2025). Therefore, the following hypotheses are proposed:

H₁: Physical work environment has a positive effect on employee engagement.

H₂: Physical work environment has a negative effect on turnover intention.

4. Career Growth, Employee Engagement, and Turnover Intention

Career growth refers to employees' perceived opportunities for professional development, skill improvement, promotion, increased responsibility, and long-term career advancement within the organization (Balushi et al., 2022). It includes not only vertical promotion but also the development of competencies and experiences that enhance employees' professional value (Jun & Ming, 2022).

Career growth is a crucial factor in shaping employee engagement. Employees who perceive clear opportunities to develop their careers are more likely to feel that the organization values their potential and supports their long-term future. This perception can strengthen psychological attachment and encourage employees to become more involved in their work. Prior research has demonstrated that career growth is positively associated with engagement, commitment, and other favorable work attitudes (Jun & Ming, 2022; Nurhayati et al., 2024).

Career growth is also expected to reduce turnover intention. Employees who see meaningful career prospects within the organization are less likely to search for alternative employment. Conversely, limited career development may create frustration, perceived stagnation, and stronger intention to leave. This is particularly relevant for skilled technical employees in mining contractor companies, such as operators and mechanics, whose competencies are highly valued in the labor market. Studies by Kasdorf and Kayaalp (2022), Haliansyah et al. (2024), Yu et al. (2025), and Živković et al. (2024) support the argument that career development opportunities can reduce turnover intention. Based on these arguments, the following hypotheses are proposed:

H₃: Career growth has a positive effect on employee engagement.

H₄: Career growth has a negative effect on turnover intention.

5. Family Supportive Organization, Employee Engagement, and Turnover Intention

Family supportive organization reflects the extent to which an organization provides formal and informal support to help employees manage the relationship between work and family responsibilities. Such support may include family-friendly policies, supervisor support, flexibility, and an organizational climate that recognizes employees' family needs (Johnston et al., 2022; Taheri, 2021). In demanding work contexts, organizational support for family life

may help reduce work-family conflict and improve employees' psychological well-being (Bajaba et al., 2022; Brandão & Matias, 2024).

From the social exchange perspective, family supportive organization can be understood as a form of organizational care beyond the formal work relationship. When employees perceive that the organization respects their family responsibilities, they may respond with stronger emotional attachment and greater engagement. Previous studies suggest that family and organizational support may enhance employee engagement and reduce negative work outcomes (Uddin et al., 2023).

Family supportive organization may also reduce turnover intention. Employees who feel supported in balancing work and family demands may be less likely to leave the organization. Taheri (2021) and Normawati et al. (2025) show that family-supportive organizational environments can help reduce employees' intention to leave. However, the effect of family supportive organization may depend on the work context. In mining-related jobs, employees often work far from their families, follow demanding schedules, and experience limited family time. Therefore, examining this relationship in a mining contractor context is theoretically and practically important. Thus, the following hypotheses are proposed:

H₅: Family supportive organization has a positive effect on employee engagement.

H₆: Family supportive organization has a negative effect on turnover intention.

6. Employee Engagement and Turnover Intention

Employee engagement refers to a positive and fulfilling work-related state characterized by vigor, dedication, and absorption (Kwon & Kim, 2020). Engaged employees tend to invest their physical, cognitive, and emotional energy in their work. They are more likely to experience meaning in their tasks, show dedication to organizational goals, and maintain stronger psychological attachment to the organization.

Employee engagement is expected to reduce turnover intention because engaged employees are more emotionally connected to their work and less likely to seek alternative employment. Prior studies have consistently shown a negative relationship between employee engagement and turnover intention (Indriyani & Meria, 2022; Kissi et al., 2024). In the context of high-risk industries, engagement becomes particularly important because employees must not only perform demanding technical tasks but also maintain resilience and commitment under challenging work conditions. Accordingly, the following hypothesis is proposed:

H₇: Employee engagement has a negative effect on turnover intention.

7. The Mediating Role of Employee Engagement

This study further proposes that employee engagement mediates the relationships between physical work environment and turnover intention, and between career growth and turnover intention. Organizational practices may not only influence turnover intention directly, but also indirectly by shaping employees' psychological attachment to their work and organization. In this sense, employee engagement serves as a mechanism that explains how organizational support is translated into retention-related outcomes.

A supportive physical work environment can increase employee engagement by creating a sense of safety, comfort, and organizational care. Engaged employees, in turn, are less likely to develop an intention to leave. Similarly, career growth opportunities can strengthen employee engagement by signaling that the organization values employees' future and professional development. When employees become more engaged, their intention to leave decreases. Based on this logic, the following mediation hypotheses are proposed:

H_{7a}: Employee engagement mediates the effect of physical work environment on turnover intention.

H_{7b}: Employee engagement mediates the effect of career growth on turnover intention.

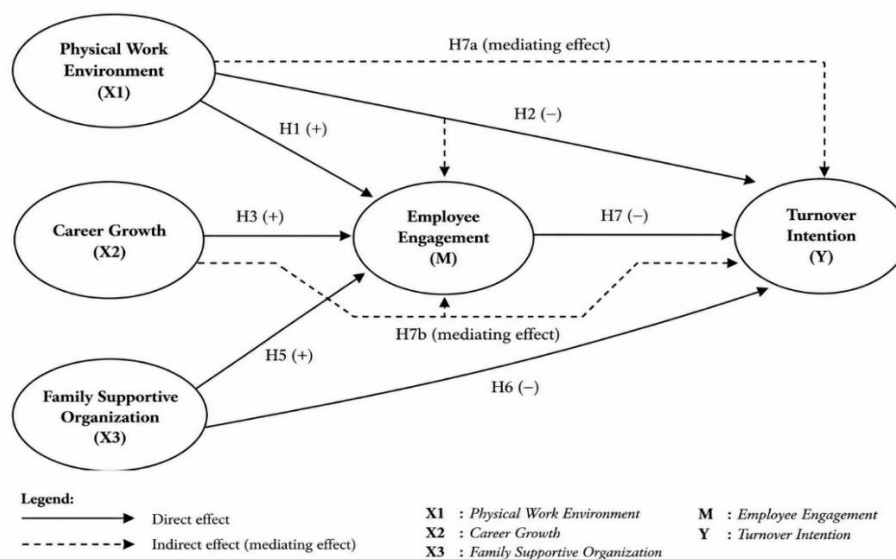


Figure 1: Conceptual Framework

C. METHODS

This study employed a quantitative approach with a cross-sectional survey design to examine the relationships among the proposed latent constructs. The design was considered appropriate because the study aimed to test direct and indirect relationships between physical work environment, career growth, family supportive organization, employee engagement, and turnover intention within a single empirical model. More specifically, this study adopted an explanatory orientation, as it sought to explain how organizational practices may shape employees' intention to leave through the psychological mechanism of employee engagement.

The population of this study consisted of contract employees of PT. XXX working at the Tongofa project site, Morowali, Central Sulawesi. This context was selected because it represents a high-risk and demanding work environment, characterized by remote project locations, operational pressure, and the need for skilled technical workers. Such conditions make the mining contractor industry a relevant setting for examining turnover intention, particularly among contract employees whose employment status and career prospects may influence their attachment to the organization.

The sampling technique used in this study was stratified sampling. This technique was applied to ensure that employees from different departments within the project site were proportionally represented in the sample. The unit of analysis was the individual employee. The minimum sample size was determined using the sample-to-item ratio approach. Following the recommendation that the number of respondents should be at least five times the number of measurement items, the minimum required sample was 190 respondents for 38 indicators. The final sample consisted of 235 respondents, which exceeded the minimum requirement and was considered adequate for PLS-SEM analysis. Respondents included in this study were active contract employees working at the Tongofa project site, had worked for at least six months, and voluntarily agreed to participate in the survey.

Primary data were collected using a structured questionnaire. The instrument was developed by adapting measurement items from prior validated studies. Physical work environment was measured using nine items adapted from Anasi (2020) and Abdullahi et al. (2023). Career growth was measured using nine items adapted from Balushi et al. (2022). Family supportive organization was measured using nine items adapted from Johnston et al. (2022). Employee engagement was measured using seven items adapted from Salas et al. (2022), while turnover intention was measured using four items adapted from Yao et al. (2025).

All items were measured using a five-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree. The items were adjusted to fit the context of contract employees in a mining contractor company without changing their conceptual meaning.

Data collection was conducted from January 4 to March 15, 2026, using Microsoft 365 Forms. The online survey format was chosen to facilitate data distribution and collection because respondents were located in operational project areas. This approach also helped improve the efficiency of data management and reduce possible data entry errors. Participation was voluntary, and respondents were informed that their responses would be used only for research purposes. The questionnaire was completed anonymously to reduce social desirability bias and encourage more honest responses. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4.0. PLS-SEM was selected because it is suitable for testing complex structural models involving multiple latent variables, direct effects, and mediation effects. In addition, PLS-SEM is appropriate for prediction-oriented research and does not require strict assumptions of multivariate normality (Hair et al., 2021).

The analysis was conducted in two main stages. First, the measurement model was assessed to evaluate the validity and reliability of the constructs. Convergent validity was examined through factor loadings and average variance extracted (AVE). Construct reliability was assessed using composite reliability and Cronbach's alpha. Discriminant validity was evaluated using the heterotrait-monotrait ratio (HTMT). Second, the structural model was assessed by examining the coefficient of determination (R^2), effect size (f^2), path coefficients, t-statistics, and p-values. Hypotheses were evaluated using a bootstrapping procedure with a significance threshold of $p < 0.05$. The mediation effects of employee engagement were assessed by examining the significance of the indirect effects. Partial mediation was identified when both direct and indirect effects were significant, while full mediation would be indicated if only the indirect effect was significant.

Before the final analysis, the dataset was screened to ensure that no missing values or extreme outliers affected the results. The use of validated instruments, anonymous responses, and systematic data screening helped improve the quality of the data and reduce potential bias. Through this methodological procedure, the study sought to provide reliable and valid empirical evidence regarding the mechanisms through which organizational practices influence employee engagement and turnover intention in the mining contractor context.

D. RESULTS AND DISCUSSION

1. Respondent Profile

This study involved 235 contract employees of PT. XXX working at the Tongofa project site, Morowali, Central Sulawesi. The respondents were selected using stratified sampling to ensure that the sample represented the main work units within the company. Presenting the respondent profile is important because employees' demographic and work-related characteristics may shape how they perceive the physical work environment, career growth opportunities, family supportive organization, employee engagement, and turnover intention. Overall, the respondents were predominantly male, relatively young, had a short tenure, and were mostly assigned to operational departments.

Table 1. Demographic Profile of Respondents

Characteristic	Dominant Category	Percentage
Gender	Male	87%
Age	21–30 years old	62.50%
Tenure	Less than 1 year	44%
Educational background	Elementary–Senior High School/equivalent	37.02%
Employment status	Contract employee	100%
Work location	Tongofa project site	100%

Authors' survey data, 2026.

Table 2. Respondent Distribution by Department

Department	Number of Respondents	Percentage
Operation	139	59.15%
Plant Maintenance	48	20.43%
HRGA-IT-FIN	13	5.53%
Logistics	12	5.11%
Engineering	11	4.68%
HSE	6	2.55%
Construction	3	1.28%
Training Centre	2	0.85%
Site Management	1	0.43%
Total	235	100%

Authors' survey data, 2026.

As shown in Table 2, most respondents came from the Operation Department, accounting for 139 employees or 59.15% of the total sample, followed by Plant Maintenance with 48 employees or 20.43%. The dominance of these two departments indicates that the data mainly represent employees directly involved in the company's core activities, such as heavy equipment operation, unit maintenance, and field-based technical work. This profile is highly relevant because these employee groups are most exposed to operational pressure, occupational risks, remote work conditions, and limited facilities at the mining site. Therefore, the respondent profile strengthens the relevance of the proposed model in explaining employee engagement and turnover intention among contract employees in the mining contractor industry.

2. Measurement Model

The measurement model was evaluated to ensure that the research instruments met the criteria for validity and reliability before testing the structural relationships. Convergent validity was assessed using factor loadings and average variance extracted (AVE), while construct reliability was evaluated using composite reliability and Cronbach's alpha. The results indicate that all constructs met the required criteria. The AVE values for all variables were above 0.50, while the composite reliability and Cronbach's alpha values were above 0.70. These results indicate that the indicators adequately measured their respective constructs and demonstrated strong internal consistency.

Table 3. Validity and Reliability Test

Variable	Items	Factor Loadings	AVE	Composite Reliability	Cronbach's Alpha
Physical Environment Work	PWE1	0.774	0.661	0.946	0.935
	PWE2	0.827			
	PWE3	0.737			
	PWE4	0.831			
	PWE5	0.733			
	PWE6	0.849			
	PWE7	0.843			
	PWE8	0.871			
	PWE9	0.840			
Career Growth	CG1	0.859	0.643	0.941	0.930
	CG2	0.879			
	CG3	0.823			
	CG4	0.860			
	CG5	0.793			
	CG6	0.867			
	CG7	0.700			
	CG8	0.725			
	CG9	0.680			

Variable	Items	Factor Loadings	AVE	Composite Reliability	Cronbach's Alpha
Family Supportive Organization	FSO1	0.876	0.758	0.966	0.960
	FSO2	0.905			
	FSO3	0.855			
	FSO4	0.853			
	FSO5	0.901			
	FSO6	0.882			
	FSO7	0.861			
	FSO8	0.852			
	FSO9	0.849			
Employee Engagement	EE1	0.833	0.757	0.956	0.946
	EE2	0.901			
	EE3	0.877			
	EE4	0.901			
	EE5	0.879			
	EE6	0.843			
	EE7	0.853			
Turnover Intention	TI1	0.903	0.749	0.923	0.888
	TI2	0.784			
	TI3	0.874			
	TI4	0.896			

Source: Authors' own calculation using SmartPLS 4.0, 2026.

Table 3 shows that the majority of factor loadings exceeded 0.70, indicating strong indicator contributions to their respective constructs. One indicator, CG9, had a loading of 0.680, which was slightly below 0.70. However, it was retained because the AVE and reliability values for the career growth construct remained above the recommended thresholds. In PLS-SEM, indicators with loadings between 0.40 and 0.70 may be retained when they do not reduce the overall validity and reliability of the construct. Therefore, the measurement structure was considered adequate.

Discriminant validity was assessed using the heterotrait-monotrait ratio (HTMT). HTMT was used to ensure that each construct in the model was empirically distinct from the others. All HTMT values were below 0.90, indicating no discriminant validity issue.

Table 4. Discriminant Validity

HTMT Ratio	Employee Engagement	Career Growth	Family Supportive Organization	Physical Work Environment
Career Growth	0.614			
Family Supportive Organization	0.309	0.514		
Physical Work Environment	0.534	0.533	0.492	
Turnover Intention	0.699	0.495	0.133	0.466

Source: Authors' own calculation using SmartPLS 4.0, 2026.

As presented in Table 4, the highest HTMT value was found between employee engagement and turnover intention, with a value of 0.699. Although these constructs are conceptually related, the value remains well below the 0.90 threshold. This confirms that employee engagement and turnover intention are empirically distinct constructs. Overall, the measurement model satisfied the required criteria and was considered appropriate for structural model evaluation.

3. Structural Model

After confirming the validity and reliability of the measurement model, the analysis proceeded to the structural model. The structural model was assessed to evaluate the predictive

power of the proposed model and to test the hypothesized relationships among variables. The coefficient of determination (R^2) was used to assess the extent to which the exogenous variables explained the endogenous variables.

Table 5. R-Square of the Research Model

Variable	R Square
Employee Engagement	0.406
Turnover Intention	0.469

Source: Authors' own calculation using SmartPLS 4.0, 2026.

Table 5 shows that physical work environment, career growth, and family supportive organization explained 40.6% of the variance in employee engagement. Meanwhile, physical work environment, career growth, family supportive organization, and employee engagement explained 46.9% of the variance in turnover intention. These values indicate that the model has meaningful predictive power in explaining employee engagement and turnover intention.

However, the R^2 values also suggest that other factors outside the model may contribute to employee engagement and turnover intention. In the mining contractor context, factors such as compensation, leadership style, workload, safety climate, employment security, contract status, organizational culture, organizational justice, and external employment opportunities may also influence employees' intention to stay or leave. Therefore, the R^2 values should not be interpreted as a weakness of the model, but rather as evidence that turnover intention is a multidimensional phenomenon shaped by a combination of organizational, psychological, and contextual factors.

4. Hypothesis Testing

Hypothesis testing was conducted by examining the path coefficients, t-statistics, p-values, and effect sizes (f^2). The results show that five direct hypotheses were supported, while two hypotheses related to family supportive organization were not supported because the direction and/or significance of the relationships did not align with the proposed hypotheses.

Table 6. Hypothesis Testing

Hypothesis	Path	Path Coef.	T Stat.	P Values	f^2	Decision
H1	PWE → EE	0.304	5.134	0.000	0.106	Supported
H2	PWE → TI	-0.177	2.938	0.003	0.036	Supported
H3	CG → EE	0.460	7.202	0.000	0.243	Supported
H4	CG → TI	-0.170	2.437	0.015	0.030	Supported
H5	FSO → EE	-0.057	0.798	0.426	0.004	Not supported
H6	FSO → TI	0.209	3.681	0.000	0.058	Not supported
H7	EE → TI	-0.521	6.698	0.000	0.304	Supported

Source: Authors' own calculation using SmartPLS 4.0, 2026.

Based on Table 6, career growth had the strongest effect on employee engagement among the exogenous variables. Meanwhile, employee engagement had the strongest effect on turnover intention. These results suggest that employee engagement is a critical mechanism in explaining employees' intention to leave. The effect size of employee engagement on turnover intention was 0.304, indicating an effect approaching a large level. The effect size of career growth on employee engagement was 0.243, indicating a moderate effect. By contrast, the direct effects of physical work environment and career growth on turnover intention were relatively small, suggesting that their influence on turnover intention becomes stronger when employee engagement is considered as a mediating mechanism.

5. Mediation Testing

The mediation analysis was conducted to examine whether employee engagement acted as a mediating variable in the relationships between physical work environment and turnover intention, and between career growth and turnover intention.

Table 7. Mediation Test

Hypothesis	Path	Path Coef.	T Stat.	P Values	Decision
H7a	PWE → EE → TI	-0.159	4.080	0.000	Supported
H7b	CG → EE → TI	-0.240	5.859	0.000	Supported

Source: Authors' own calculation using SmartPLS 4.0, 2026.

Table 7 shows that employee engagement mediated the effect of physical work environment on turnover intention, with a coefficient of -0.159 and a p-value of 0.000. Employee engagement also mediated the effect of career growth on turnover intention, with a coefficient of -0.240 and a p-value of 0.000. Since the direct effects of physical work environment and career growth on turnover intention were also significant, the mediation effects can be classified as complementary partial mediation. This means that physical work environment and career growth reduce turnover intention both directly and indirectly by increasing employee engagement.

6. Discussion

The finding for H₁ confirms that physical work environment has a positive effect on employee engagement. This result indicates that the physical work environment is not merely a technical element of organizational management but also a visible signal of how far the company cares about employee safety, comfort, and well-being. In the context of a mining contractor company, the physical work environment should not be understood narrowly as office space, lighting, or facility layout. It also includes the quality of facilities at the project site, the adequacy of work equipment, access to safety facilities, rest areas, health facilities, accommodation, and supporting infrastructure in remote work locations. When employees perceive that the company provides a safe and decent work environment, they are more likely to develop positive perceptions of the organization, which are reflected in stronger work engagement.

This finding is consistent with Anasi (2020), Judeh (2021), and Indriyani and Meria (2022), who found that the quality of the work environment contributes to employee engagement and other positive work attitudes. From the perspective of social exchange theory, a supportive work environment can be interpreted as an organizational investment in employee well-being. When employees receive adequate facilities and supportive working conditions, they tend to reciprocate through greater energy, dedication, and involvement in their work (Blau, 1964; Saks, 2006; Balogun et al., 2020). In a high-risk mining context, this form of organizational care becomes particularly important because employees perform their duties under physically and psychologically demanding conditions.

The finding for H₂ shows that physical work environment has a negative effect on turnover intention. This means that better physical working conditions reduce employees' intention to leave the organization. The result confirms that employees' intention to stay is not shaped only by compensation but also by their daily work experience. Poor physical working conditions may increase physical fatigue, feelings of insecurity, psychological discomfort, and perceptions that the organization does not adequately care for employees' basic needs. Conversely, a safer and more supportive work environment may reduce job pressure and strengthen employees' reasons to remain with the organization.

This finding supports William and Sundiman (2025) and Indriyani and Meria (2022), who found that a positive work environment may reduce turnover intention. However, the

relatively small effect size suggests that physical work environment is not the only determinant of turnover intention. In the mining industry, employees may still consider leaving even when working conditions improve, particularly when other issues such as contract status, career uncertainty, compensation, workload, and distance from family remain unresolved. Therefore, improving the physical work environment should be treated as part of a broader retention strategy rather than as a stand-alone intervention.

The finding for H₃ demonstrates that career growth has a positive effect on employee engagement. This is one of the most important findings of the study because career growth had the strongest effect among the exogenous variables in explaining employee engagement. The result suggests that contract employees in the mining contractor industry do not only seek employment as a source of income; they also need a clear sense of professional future. Career development opportunities, technical training, certification, internal promotion, increased responsibility, and possible employment status improvement can create the perception that the organization provides space for professional growth.

This finding is consistent with Balushi et al. (2022), Jun and Ming (2022), Kasdorf and Kayaalp (2022), Haliansyah et al. (2024), Nurhayati et al. (2024), Yu et al. (2025), and Živković et al. (2024), who emphasized that career development opportunities are important for strengthening engagement, commitment, and positive employee attitudes. From a social exchange perspective, career growth represents a long-term form of exchange. The organization provides development opportunities, and employees reciprocate through stronger engagement. In PT. XXX, this is particularly relevant because voluntary turnover is concentrated among skilled workers, such as heavy equipment operators and mechanics. These employees possess specific technical competencies that are highly valued in the labor market, which means they may be more likely to leave if the organization does not offer clear career prospects.

The finding for H₄ shows that career growth has a negative effect on turnover intention. This means that the stronger employees' perception of career growth opportunities, the lower their intention to leave the organization. For contract employees, career growth is particularly meaningful because it is closely related to future security, employment stability, and recognition of competence. When employees see that the organization provides a clear development pathway, they have stronger reasons to remain. Conversely, when they perceive career stagnation, they may begin searching for external opportunities that offer better status, compensation, or development prospects.

This finding aligns with Haliansyah et al. (2024), Kasdorf and Kayaalp (2022), Li et al. (2025), Yao et al. (2025), and Živković et al. (2024), who found that career development plays an important role in reducing turnover intention. Although the direct effect of career growth on turnover intention was relatively small, the relationship remains practically meaningful. It indicates that career growth operates not only through a direct pathway but also through the psychological mechanism of employee engagement. Therefore, organizations should ensure that career development programs are not merely formal procedures but are perceived by employees as realistic, transparent, and attainable opportunities.

The finding for H₅ reveals that family supportive organization does not have a significant effect on employee engagement. This result differs from the initial expectation that organizational support for family life would strengthen employee engagement. Theoretically, organizations that support employees' work-family needs are expected to enhance employees' perceptions that the company cares about their non-work life. Such perceptions are expected to encourage more positive attitudes toward the organization (Taheri, 2021; Bajaba et al., 2022; Uddin et al., 2023). However, in this study, family supportive organization did not appear to be strong enough to enhance employee engagement.

This non-significant result may be explained by the characteristics of mining contractor work. Employees who work in remote locations, far from their families, and within rotational work systems may prioritize factors that directly affect their daily work experience, such as safety, site facilities, career clarity, compensation, and employment status. In such conditions, formal family support policies may not immediately translate into employee engagement if they are not perceived as effective solutions to employees' most pressing problems. This finding enriches the discussion by Johnston et al. (2022), McLean et al. (2023), and Brandão and Matias (2024), who argued that the effectiveness of work-family support depends on job context, organizational culture, and the actual form of support provided.

The finding for H₆ shows that family supportive organization does not reduce turnover intention. Although the FSO → TI relationship was statistically significant, the coefficient was positive, which contradicts the proposed hypothesis. Therefore, H₆ was not supported. This result should be interpreted carefully. It does not imply that family support is unimportant. Rather, it suggests that the existing form of organizational family support may not match the actual needs of employees in the mining contractor context. In jobs located far from employees' families, formal family support may be insufficient if it is not accompanied by structural adjustments to the work system.

This finding differs from Taheri (2021) and Normawati et al. (2025), who found that family supportive organization can reduce turnover intention. However, it is consistent with the broader argument of Bajaba et al. (2022) and Brandão and Matias (2024), who suggested that the effect of organizational support may depend on work pressure, work-family conflict, and organizational context. In PT. XXX, the positive direction of the FSO → TI relationship may indicate that greater awareness of family needs could increase employees' consideration of alternative employment that allows closer proximity to family, better family time, or more flexible work arrangements. Thus, family supportive organization should be evaluated not only as a formal policy but also in terms of whether it genuinely addresses employees' lived realities.

The finding for H₇ confirms that employee engagement has a negative effect on turnover intention. This was the strongest relationship in the model, as reflected in both the coefficient and effect size. The result indicates that employees with higher engagement are less likely to consider leaving the organization. Engaged employees tend to view their work as meaningful, show greater energy in performing tasks, demonstrate dedication, and feel emotionally and cognitively connected to their work.

This finding is consistent with Kwon and Kim (2020), Indriyani and Meria (2022), Kissi et al. (2024), and Chen et al. (2021), who found that employee engagement is negatively related to turnover intention. In the mining contractor industry, employee engagement becomes especially important because the work requires not only technical competence but also mental resilience, discipline, and commitment to a demanding work system. From the perspective of social exchange theory, employee engagement reflects a positive response to a favorable exchange relationship. When employees feel supported through a decent work environment and clear career opportunities, they are more likely to maintain their relationship with the organization.

The finding for H_{7a} shows that employee engagement mediates the effect of physical work environment on turnover intention. This result indicates that the physical work environment reduces turnover intention not only directly but also indirectly through employee engagement. In other words, improvements in the physical work environment have two effects: a functional effect by improving comfort and safety, and a psychological effect by strengthening employees' attachment to the organization. A safe and decent work environment makes employees feel cared for, which encourages engagement and reduces their intention to leave.

This finding supports Indriyani and Meria (2022), Kissi et al. (2024), William and Sundiman (2025), and Balogun et al. (2020), who emphasized work engagement as an important mechanism linking working conditions to turnover intention. Theoretically, this result shows that organizational practices often work through internal psychological mechanisms before shaping retention-related outcomes. Therefore, organizations should not only improve physical facilities but also ensure that employees perceive these improvements as genuine organizational care.

The finding for H_{7b} shows that employee engagement mediates the effect of career growth on turnover intention. This mediation path had a stronger coefficient than the mediation path involving physical work environment, which further confirms career growth as the dominant factor in the model. Career growth reduces turnover intention not only because employees see future prospects in the organization, but also because it strengthens their current engagement with work. When organizations provide development opportunities, employees are more likely to see the organization as a place where they can build their professional future.

This finding is consistent with Jun and Ming (2022), Balushi et al. (2022), Kasdorf and Kayaalp (2022), Haliansyah et al. (2024), Nurhayati et al. (2024), Yao et al. (2025), and Yu et al. (2025), who highlighted the importance of career growth in strengthening engagement and reducing turnover intention. In PT. XXX, this finding has strong practical relevance because the highest voluntary turnover occurs among skilled employees. If the company aims to reduce voluntary turnover, retention strategies should focus on concrete career development programs, including promotion pathways, competency-based training, certification, employment status improvement, and transparent career planning.

Overall, the findings strengthen the relevance of social exchange theory in explaining turnover intention in the mining contractor industry. The supported hypotheses—H₁, H₂, H₃, H₄, H₇, H_{7a}, and H_{7b}—show that organizational practices directly experienced by employees, particularly physical work environment and career growth, can shape employee engagement and reduce turnover intention. However, the unsupported results for H₅ and H₆ show that not all forms of organizational support automatically generate positive responses. The effectiveness of social exchange depends on whether the support provided by the organization fits employees' actual needs.

Theoretically, this study contributes by showing that employee engagement is an important psychological mechanism linking organizational practices to turnover intention. The findings also indicate that social exchange theory should be understood contextually. In high-risk and remote work environments, organizational support may not generate positive employee responses if it does not address employees' most urgent needs. Thus, this study enriches organizational behavior literature by demonstrating that employee retention in mining contractor companies requires a contextual understanding of the relationships among work environment, career growth, family support, engagement, and turnover intention.

Practically, the findings provide several implications for PT. XXX. First, the company should prioritize career growth as a central retention strategy, particularly for contract employees with critical technical expertise, such as heavy equipment operators and mechanics. Technical training, certification programs, internal promotion, and pathways toward permanent employment may strengthen employee engagement and reduce turnover intention. Second, the company should continuously improve the physical work environment, especially in relation to occupational safety, site facilities, accommodation, rest areas, and supporting infrastructure. Third, family supportive organization policies should be redesigned to move beyond formal support. More contextual policies, such as humane work rotation, family leave flexibility, communication facilities, and mobility support, may better address the needs of employees working far from their families.

In sum, employee retention in mining contractor companies should be built through an integrated approach. Retention cannot rely solely on administrative policies; it should combine career growth, physical work environment improvement, contextual family support, and employee engagement. The findings show that employees are more likely to remain with the organization when they see a clear career future, experience a decent and safe work environment, and develop strong psychological attachment to their work and organization.

E. CONCLUSION AND RECOMMENDATIONS

This study concludes that employee retention among contract employees in a mining contractor company is closely linked to the quality of the physical work environment, the clarity of career growth opportunities, and the extent to which employees feel engaged with their work and organization. In the context of PT. XXX at the Tongofa project site, the physical work environment plays an important role in strengthening employee engagement and reducing turnover intention. A safe, adequate, and supportive work environment does not only provide physical comfort but also signals that the organization values employee well-being.

The main finding of this study highlights career growth as the most influential factor in reducing employees' intention to leave. Contract employees, particularly those in technical positions such as operators and mechanics, need clear career pathways, training opportunities, professional certification, internal promotion, and the possibility of employment status improvement. When employees perceive that the organization provides realistic opportunities for career advancement, they are more likely to develop stronger engagement and stronger reasons to remain with the company.

This study also confirms that employee engagement serves as a key psychological mechanism linking organizational practices to employee retention. Employees who feel involved, dedicated, and emotionally connected to their work are less likely to consider leaving the organization. Thus, retention strategies should not be limited to administrative policies but should also address employees' daily work experiences and psychological attachment to the organization.

In contrast to the initial expectation, family supportive organization did not show an effective role in reducing turnover intention. This finding suggests that organizational support for family needs may be insufficient when it remains formal and does not directly address the realities of mining work. In remote and rotational work settings, family support should be translated into more concrete policies, such as humane work rotation, family leave flexibility, communication facilities, and home leave support.

Practically, the management of PT. XXX should prioritize career growth, physical work environment improvement, and employee engagement as the core of its retention strategy. Future studies are encouraged to examine multiple mining companies, apply longitudinal research designs, and include additional variables such as compensation, job insecurity, safety climate, work-life conflict, leadership, and organizational culture to provide a more comprehensive understanding of turnover intention in high-risk industries.

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