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Continuous Training and Turnover Intention: The Parallel Mediating Roles of Compensation and Job Satisfaction in an Indonesian Mineral Processing Company

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Abstract: Turnover intention is a strategic issue for mineral processing companies because it signals employee departure, which may disrupt workforce stability and increase replacement costs. Although training, compensation, and job satisfaction have been widely examined as factors associated with employees' intention to leave, prior research remains limited in explaining the roles played by compensation and job satisfaction when specified as parallel mediators. The investigation evaluates the association linking continuous training with turnover intention through these mechanisms among employees of PT Merdeka Tsingshan Indonesia. A quantitative survey was conducted among 155 permanent Indonesian employees selected through purposive sampling. The collected data were analyzed using partial least squares structural equation modeling (PLS-SEM). The estimates show that continuous training corresponds to lower turnover intention while being linked to positive assessments of both compensation and job satisfaction. Compensation and job satisfaction each show an inverse association with turnover intention and jointly constitute a complementary parallel mediation pattern. The findings contribute to the application of Job Demands–Resources Theory by examining compensation and job satisfaction as parallel mediators of the relationship between continuous training and turnover intention. They also highlight the relevance of integrating employee development, perceived compensation fairness, and job satisfaction into retention management.

Keywords: Continuous Training, Compensation, Job Satisfaction, Turnover Intention, Job Demands–Resources Theory

INTRODUCTION

Turnover intention constitutes a strategic issue for human resource management insofar as it reflects employees' inclination to consider leaving an organization and is closely associated with workforce retention. High employee turnover may lead to organizational consequences including higher recruitment and retraining expenses, depletion of organizational knowledge and work experience, and disruption of operational stability. These concerns are particularly salient in industries that require technical competence, process continuity, and substantial investment in human resource development. In the mining and mineral processing industries,

retention challenges are also associated with working conditions, reward systems, job satisfaction and broader organizational sustainability (Gunawan et al., 2024). Accordingly, understanding the conditions associated with turnover intention is important not only from an academic perspective but also to inform the formulation of more effective employee-retention strategies.

This issue becomes particularly relevant to PT Merdeka Tsingshan Indonesia (MTI), a mineral processing company operating in the Indonesia Morowali Industrial Park. Internal Learning & Development data from PT MTI indicate a sharp increase in training activities, reflected in the number of training participants rising from 62 in 2022 to 2,492 in 2024, whereas the volume of training programs expanded from five in 2022 to 113 by 2025. Participant satisfaction with training during 2024–2026 was also rated in the “very satisfied” category. However, this expansion in employee development activities has not been fully accompanied by a reduction in turnover to the expected level. Human Resources data show that the turnover ratio remained at 15.56% in 2024 and 11.27% in 2025, exceeding the company’s internal benchmark of 5%, while voluntary turnover increased from 101 to 105 employees. This condition reveals an empirical paradox: greater investment in and intensity of training have not automatically been accompanied by a decline in turnover to the company’s desired level. This phenomenon highlights the need to understand the organizational mechanisms and work attitudes associated with employees’ inclination to exit the organization.

Theoretically, the analysis is anchored in Job Demands–Resources (JD-R) Theory. Job Demands–Resources (JD-R) Theory explains how job demands and available resources jointly shape employees’ work experiences. Job resources can facilitate the achievement of work goals, help employees manage job demands, and activate motivational processes associated with favorable work attitudes and outcomes (Bakker et al., 2023; Demerouti & Bakker, 2023). For this research, continuous training is positioned as an organizational resource that provides opportunities for competency development and improved work effectiveness. Compensation is conceptualized as employees’ perceptions and evaluations of the adequacy, competitiveness, and satisfaction associated with the rewards they receive, whereas job satisfaction captures employees’ favorable affective evaluations of their job experiences. Within the JD-R framework, developmental resources provided through training and reward resources reflected in compensation can be understood as interconnected components of employees’ organizational experiences. Accordingly, the association linking continuous training with turnover intention may operate not only directly but also through employees’ evaluations of organizational reward resources and their broader work experiences.

Existing research has extensively linked employee training-based development to turnover intention, although the underlying relationship does not necessarily operate directly. Albtoosh et al. (2022) reported training satisfaction to show an inverse association with turnover intention while loyalty to the organization mediated this relationship. Martini et al. (2023) showed how the link connecting employees’ assessment of organizational investment in their development with their propensity to leave operated almost entirely via affective commitment together with perceived external employability. Pinnington et al. (2024) further reported that the association linking training in general skills with turnover intention could be understood through perceived organizational support together with job satisfaction. Taken together, this evidence indicates that the retention contribution of employee development is determined not merely by the provision of training itself; it also reflects the psychological and organization-level mechanisms arising from employees’ own experiences of development practices.

Recent literature also highlights the explanatory relevance of compensation and employees’ job satisfaction within the configuration of conditions linked to turnover intention. Zayed et al. (2022) reported that compensation systems were positively associated with employee satisfaction, with motivation serving as a mediator. Among an oil-and-gas professional sample, Memon et al. (2021) reported that favorable evaluations of training-related

provision alongside performance appraisal were associated with stronger work engagement; this engagement subsequently showed an inverse relationship with turnover intention; nevertheless, work engagement failed to transmit the association linking pay satisfaction with intention to leave. Within the Indonesian mining industry, Gunawan et al. (2024) identified reward conditions together with job satisfaction as salient factors in explaining turnover intention. More closely aligned with the variable configuration examined in this study, Hanifa et al. (2024) integrated compensation, training, job satisfaction, career development and turnover intention, with job satisfaction specified as the mediating mechanism linking HRM practices to employees' turnover intention. Collectively, these findings indicate that prior research has progressed from examining direct relationships toward explaining mediation mechanisms, although the configurations of the pathways employed remain diverse.

Despite these developments, an important research gap remains. Although prior studies have examined training and compensation together with job satisfaction and turnover intention, job satisfaction has typically been specified as the principal mediator, while training and compensation have been specified as parallel antecedents (Hanifa et al., 2024). Other studies have employed loyalty, affective commitment, perceived employability, organizational support, or work engagement as mechanisms connecting employee development with turnover-related outcomes (Albtoosh et al., 2022; Martini et al., 2023; Memon et al., 2021; Pinnington et al., 2024). However, limited attention has been given to models that simultaneously examine perceived compensation and job satisfaction as parallel mediators between continuous training and turnover intention. In particular, the mediating role of perceived compensation in this relationship remains less explored than that of job satisfaction and other work-related attitudes.

Building on this gap, this study's novelty is centered on developing a JD-R-based parallel dual-mediation model that specifies two distinct yet complementary mechanisms that connect continuous training to turnover intention: compensation as employees' evaluation of organizational reward resources and job satisfaction as an affective evaluation of work experience. Unlike previous studies that positioned training and compensation as separate antecedents in which job satisfaction functions as the mediator, this study simultaneously examines compensation together with job satisfaction as parallel mediating mechanisms originating from a single developmental resource, namely continuous training. Thus, the study's novelty extends beyond testing whether training is associated with turnover intention to explaining how this relationship operates through two mediating pathways representing employees' evaluations of organizational rewards and work experiences in Indonesia's mineral processing setting. This substantive assessment is complemented by an evaluation of out-of-sample prediction capability through PLSpredict together with the Cross-Validated Predictive Ability Test (CVPAT), thereby allowing this model to be evaluated not only in terms of explanatory power and structural relationship significance but also from a predictive perspective (Liengaard et al., 2021; Sharma et al., 2023).

Drawing from the empirical phenomenon, theoretical foundation, current state of research, and identified research gap, this study seeks to assess direct and indirect linkages involving the four constructs—continuous training, compensation, job satisfaction, and turnover intention—among permanent employees working at PT Merdeka Tsingshan Indonesia. Specifically, the study examines whether greater continuous training corresponds to lower turnover intention (H1); whether continuous training shows a positive relationship with compensation together with job satisfaction (H2 and H3); whether compensation and job satisfaction show inverse relationships with turnover intention (H4 and H5); and whether compensation and job satisfaction serve as mediators between continuous training and turnover intention (H6 and H7). Through these tests, the analysis is intended to offer a more integrated account of employee retention mechanisms while extending the use of JD-R Theory to the setting of the mineral processing industry. These objectives are represented by seven structural relationships specified in the research model.

METHODS

The study utilized an explanatory quantitative design employing a survey-based cross-sectional framework to evaluate structural associations involving Continuous Training, Compensation, Job Satisfaction, and turnover intention. This study was carried out at PT Merdeka Tsingshan Indonesia (MTI), a mineral processing company operating in the Indonesia Morowali Industrial Park, Morowali, Central Sulawesi. The study population comprised 839 permanent Indonesian employees based on the company's Human Resources records as of October 2025. Participants were recruited purposively under three criteria: permanent employment status, at least one year of tenure, and voluntary agreement to participate. The final sample consisted of 155 respondents who met the predefined eligibility criteria. Sample size adequacy should be evaluated in relation to the structural model, the minimum effect size of interest, the significance level, and the desired statistical power. The corresponding sample size calculation and its underlying assumptions should be reported to substantiate the adequacy of the sample for PLS-SEM (Hair, Joseph; Hult, Tomas; Ringle, Christian; Sarstedt, 2022). All 155 respondents who satisfied the eligibility criteria entered the final analysis. Primary data were gathered online from employees in both operational and support functions between May 20 and June 20, 2026.

Information was obtained through a structured questionnaire comprising 24 reflective indicators, with six indicators assigned to each construct. Responses used a five-level Likert response scale with endpoints of 1 = strongly disagree and 5 = strongly agree. Indicator items were constructed by contextual adaptation and synthesis of previous measures rather than reproduced verbatim from a single established scale. Continuous Training was based on Albtoosh et al. (2022) and Nabi et al. (2025), with indicators covering the relevance of training content to job requirements, training quality, skill improvement, the contribution of training to work effectiveness, the availability of time and facilities to participate in training, and ease of access to training-related information and opportunities. Compensation represented employees' perceptions and evaluations of the compensation system rather than objective remuneration levels. The construct was informed by the multidimensional domains of Heneman & Schwab (1985) Pay Satisfaction Questionnaire and its more recent application by Medina-Craven et al. (2025). The indicators covered satisfaction with base pay, compensation competitiveness, benefits, performance-based incentives or bonuses, salary increases or adjustments, and the fairness and transparency of the compensation system. The Job Satisfaction construct was based on Spector (1985) Job Satisfaction Survey and applied more recently by Gage et al. (2026), with indicators covering supervisory support, relationships with coworkers, the job as a whole, working conditions or work environment, development and promotion opportunities, and appropriate recognition for work performed. Turnover intention was contextually adapted from Bothma & Roodt (2013) six-item Turnover Intention Scale and subsequently validated by Németh et al. (2024). The indicators captured frequently thinking about leaving the organization, considering leaving the current job, intending to seek employment elsewhere, actively searching for alternative employment, planning to resign in the near future, and being likely to leave if a better opportunity became available.

The measurement and structural models were estimated using partial least squares structural equation modeling (PLS-SEM) with SmartPLS software. Before examining the focal model, potential common method bias was initially screened through principal component analysis across all indicators. The variance share attributable to the first component was interpreted as a preliminary diagnostic rather than independent evidence for whether there was method bias (Podsakoff et al., 2024). Within the reflective measurement model, an outer loading of ≥ 0.70 served as the practical benchmark for indicator reliability. Loadings in the 0.40–0.70 interval were not removed automatically when construct reliability, average variance extracted (AVE), and substantive relevance remained satisfactory. Internal consistency was judged against Cronbach's alpha and composite reliability values of ≥ 0.70 ; convergent validity

against $AVE \geq 0.50$; and discriminant validity was assessed via a heterotrait–monotrait ratio below 0.85 (J. Hair & Alamer, 2022; Hair, Joseph; Hult, Tomas; Ringle, Christian; Sarstedt, 2022).

Path coefficients, the variance inflation factor (VIF), effect size (f^2), and the coefficient of determination (R^2) formed the basis of structural-model assessment. A VIF value below 3 was used as a conservative criterion for collinearity; f^2 benchmarks near 0.02, 0.15, and 0.35 corresponded, respectively, to small, medium, and large effects. Statistical significance for the proposed relationships was assessed using a 5,000-subsample bootstrap procedure with one-tailed testing at $\alpha = 0.05$, consistent with the directional hypotheses. Mediation was evaluated through specific indirect effects; a complementary form of mediation was inferred when direct and indirect effects each reached significance and carried an identical sign. Both the total indirect effect and total effect were additionally examined to provide a fuller characterization of the overall mediation mechanism (J. Hair & Alamer, 2022).

Predictive performance beyond the estimation sample was examined with PLSpredict using 10-fold cross-validation conducted for 10 repetitions. Evidence of predictive relevance was determined from $Q^2_{predict}$, together with a comparison of PLS-model performance with the linear-model benchmark using root mean square error (RMSE) and mean absolute error (MAE). This evaluation was further strengthened through the Cross-Validated Predictive Ability Test (CVPAT), which contrasts prediction loss from PLS-SEM against the indicator-average reference and the linear-model benchmark. A statistically significant negative loss difference indicates superior predictive performance (Liengard et al., 2021; Sharma et al., 2023).

Using the Job Demands–Resources (JD-R) framework, Continuous Training (X) served in the role of the primary exogenous construct, Compensation (Z1) and Job Satisfaction (Z2) as two concurrent mediators, with turnover intention (Y) as the primary endogenous construct. H1–H5 examined five direct relationships in accordance with the hypothesized directions, whereas H6 and H7 assessed mediation through Compensation and Job Satisfaction, respectively, within the Continuous Training–turnover intention relationship. The conceptual framework is displayed in Figure 1.

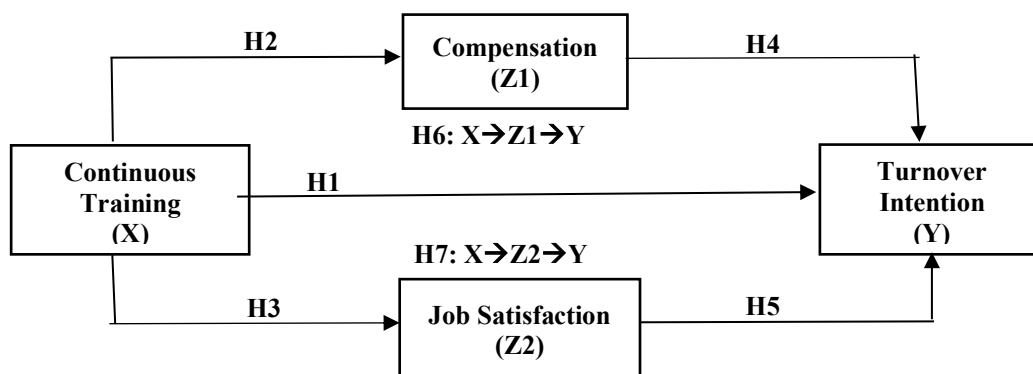


Figure 1. Conceptual Framework of the Study
Source: Developed by the researchers (2026)

RESULTS AND DISCUSSION

Results

Respondent Characteristics

The analytic sample included 155 permanent employees of PT Merdeka Tsingshan Indonesia. Most respondents were men (83%), aged 20–30 years (56%), had completed senior secondary school or vocational high school (45%), held Non-Staff positions (51%), and had organizational tenure of 1–3 years (90%).

Table 1. Respondent Characteristics

Characteristic	Category	Frequency	Percentage
Gender	Male	128	83%
	Female	27	17%
Age	<20 years	2	1%
	20–30 years	86	56%
	31–40 years	43	28%
	41–50 years	22	14%
	51–55 years	2	1%
Education	Senior High School /Vocational High School	70	45%
	Diploma (D1/D2/D3)	29	19%
	Bachelor's Degree (S1/D4)	53	34%
	Master's Degree (S2)	3	2%
Position	Non-Staff	79	51%
	Officer	51	33%
	Supervisor	21	13%
	Assistant Manager	3	2%
	Manager	1	1%
Tenure	1–3 years	140	90%
	4–6 years	12	8%
	>6 years	3	2%

Source: Research data processing (2026).

Preliminary Assessment of Potential Common Method Bias

Given the same-source, same-period self-report data, PCA was used only as an initial diagnostic screening for potential CMB (Podsakoff et al., 2024).

Table 2. Principal Component Analysis Results

Component	Eigenvalue	Variance Explained	Cumulative Variance
1	11.278	47.0%	47.0%
2	1.414	5.9%	52.9%
3	1.289	5.4%	58.3%
4	1.154	4.8%	63.1%

Source: PCA results, research data processing (2026).

The first principal component explained 47.0% of the total variance. Although this result provides preliminary information about the distribution of variance across the measured indicators, it does not establish the absence of common method bias. Therefore, the PCA results were interpreted only as an initial diagnostic assessment (Podsakoff et al., 2024).

Measurement Model Assessment

Reflective measurement-model quality was evaluated from outer loadings and internal consistency, together with AVE and HTMT (J. Hair & Alamer, 2022; Hair, Joseph; Hult, Tomas; Ringle, Christian; Sarstedt, 2022).

Table 3. Reliability and Convergent Validity

Construct	Outer Loading Range	Cronbach's Alpha	rho_A	rho_C (CR)	AVE	Conclusion
Continuous Training (X)	0.661–0.857	0.859	0.868	0.896	0.591	Reliable and valid
Compensation (Z1)	0.682–0.824	0.858	0.867	0.894	0.585	Reliable and valid
Job Satisfaction (Z2)	0.663–0.824	0.858	0.870	0.893	0.583	Reliable and valid
Turnover Intention (Y)	0.677–0.918	0.891	0.903	0.918	0.653	Reliable and valid

Source: SmartPLS output, research data processing (2026).

The adopted internal-consistency and convergent-validity criteria were satisfied by all constructs (Cronbach's alpha = 0.858–0.891; ρ_C = 0.893–0.918; AVE = 0.583–0.653). Five indicators had loadings below 0.70 (X1 = 0.661; Y1 = 0.677; Z1.1 = 0.696; Z1.3 = 0.682; Z2.2 = 0.663) but were retained because construct reliability, AVE, and substantive relevance remained adequate (J. Hair & Alamer, 2022; Hair, Joseph; Hult, Tomas; Ringle, Christian; Sarstedt, 2022).

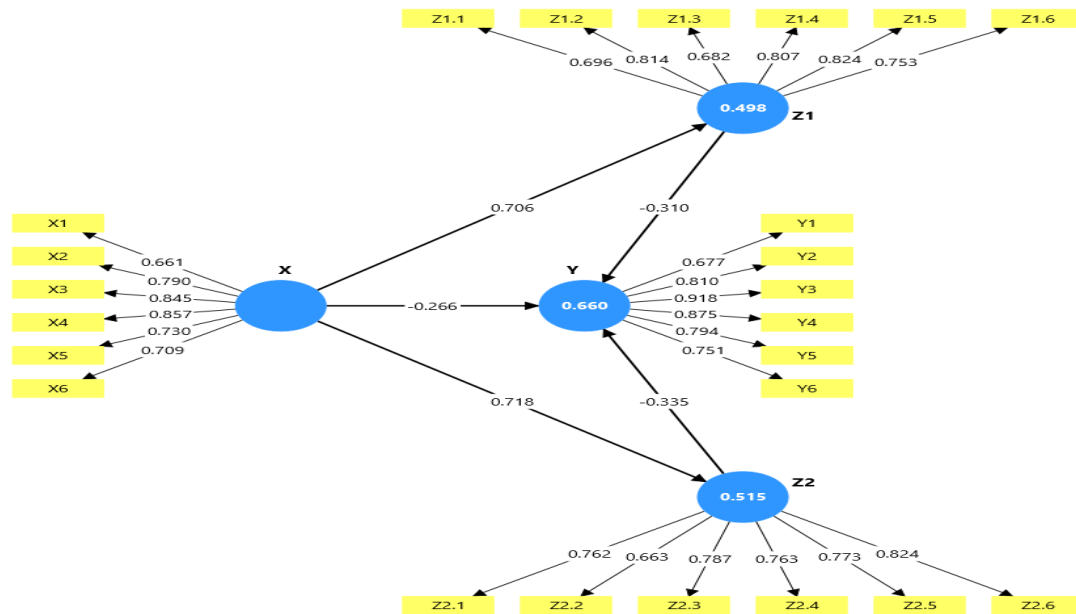


Table 4. Heterotrait–Monotrait Ratio

Construct	X	Z1	Z2	Y
Continuous Training (X)	–			
Compensation (Z1)	0.808	–		
Job Satisfaction (Z2)	0.820	0.748	–	
Turnover Intention (Y)	0.818	0.805	0.812	–

Source: SmartPLS output, research data processing (2026).

All HTMT values were <0.85, with a maximum of 0.820 between Continuous Training and Job Satisfaction, thereby satisfying the discriminant-validity criterion (J. Hair & Alamer, 2022; Hair, Joseph; Hult, Tomas; Ringle, Christian; Sarstedt, 2022).

Structural Model Assessment

Structural-model adequacy was examined in terms of VIF, R^2 , and f^2 (J. Hair & Alamer, 2022; Hair, Joseph; Hult, Tomas; Ringle, Christian; Sarstedt, 2022).

Table 5. Structural Model Assessment

Endogenous Construct/Path	VIF	R^2	Adjusted R^2	f^2
Compensation (Z1)	–	0.498	0.495	–
X → Z1	1.000	–	–	0.992
Job Satisfaction (Z2)	–	0.515	0.512	–
X → Z2	1.000	–	–	1.061
Turnover Intention (Y)	–	0.660	0.653	–
X → Y	2.559	–	–	0.081
Z1 → Y	2.215	–	–	0.127
Z2 → Y	2.292	–	–	0.144

Source: SmartPLS output, research data processing (2026).

VIF values fell between 1.000 and 2.559, showing no problematic collinearity. Continuous Training accounted for 49.8% of variance in Compensation and 51.5% in Job Satisfaction, while the three predictors jointly accounted for 66.0% of turnover-intention variance (adjusted $R^2 = 0.653$). Its effects on Compensation ($f^2 = 0.992$) and Job Satisfaction ($f^2 = 1.061$) were large, whereas the effects on turnover intention were small for Continuous Training ($f^2 = 0.081$), Compensation ($f^2 = 0.127$), and Job Satisfaction ($f^2 = 0.144$), with the latter approaching the medium-effect threshold (J. Hair & Alamer, 2022; Hair, Joseph; Hult, Tomas; Ringle, Christian; Sarstedt, 2022).

Hypothesis Testing and Mediation Effects

Hypotheses were tested using 5,000-subsample bootstrapping with a one-tailed $\alpha = 0.05$ test (J. Hair & Alamer, 2022; Hair, Joseph; Hult, Tomas; Ringle, Christian; Sarstedt, 2022).

Table 6. Direct Effect Hypothesis Testing

Hypothesis	Relationship	β	STDEV	t	p	Decision
H1	$X \rightarrow Y$	-0.266	0.070	3.802	<0.001	Supported
H2	$X \rightarrow Z1$	0.706	0.039	18.262	<0.001	Supported
H3	$X \rightarrow Z2$	0.718	0.042	17.093	<0.001	Supported
H4	$Z1 \rightarrow Y$	-0.310	0.076	4.061	<0.001	Supported
H5	$Z2 \rightarrow Y$	-0.335	0.066	5.108	<0.001	Supported

Source: SmartPLS output, research data processing (2026).

All direct paths were statistically significant and consistent with the hypothesized directions. The Continuous Training coefficient was negative for turnover intention but positive for both Compensation and Job Satisfaction, whereas the coefficients of both mediators with turnover intention were negative. Thus, H1–H5 were supported.

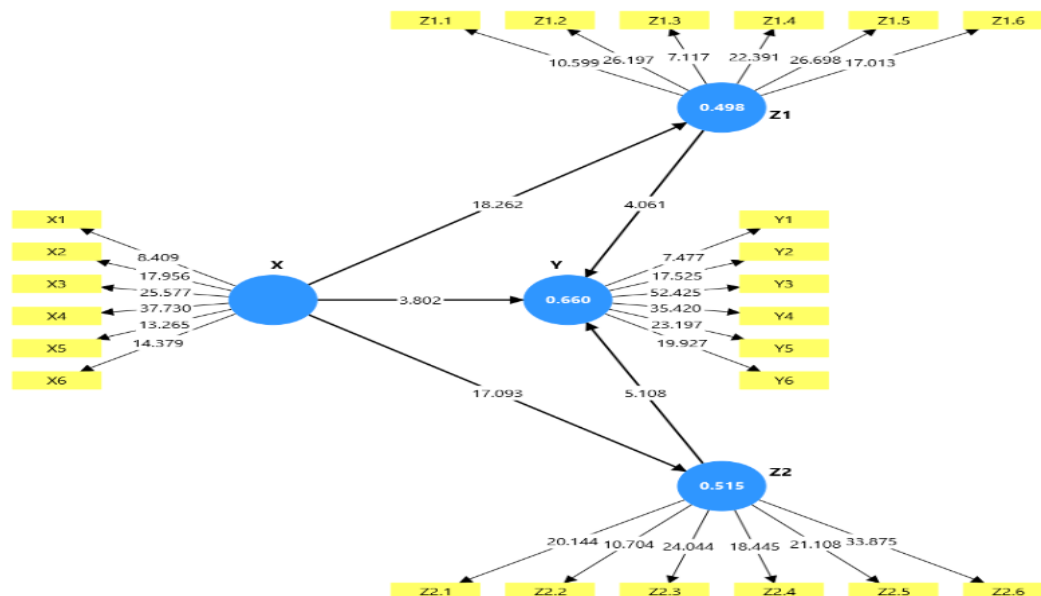


Figure 3. Structural Model (t-statistics)

Source: SmartPLS output, research data processing (2026).

Table 7. Specific Indirect Effects

Hypothesis	Mediation Path	β	STDEV	t	p	Decision
H6	$X \rightarrow Z1 \rightarrow Y$	-0.218	0.057	3.864	<0.001	Supported
H7	$X \rightarrow Z2 \rightarrow Y$	-0.240	0.051	4.728	<0.001	Supported

Source: SmartPLS output, research data processing (2026).

The indirect effects through Compensation ($\beta = -0.218$) and Job Satisfaction ($\beta = -0.240$) were significant. Because the direct $X \rightarrow Y$ effect was also negative and significant, both indirect pathways indicated complementary mediation (J. Hair & Alamer, 2022). Their numerical difference was not interpreted as statistically significant because no direct contrast test was conducted.

Total Indirect Effect and Total Effect

The two mediator-specific indirect effects are combined in the total indirect effect, whereas the total effect combines those indirect components with the direct Continuous Training effect with respect to turnover intention (J. Hair & Alamer, 2022).

Table 8. Total Indirect Effect and Total Effect of Continuous Training on Turnover Intention

Effect	β	STDEV	t	p
Direct Effect	-0.266	0.070	3.802	<0.001
Total Indirect Effect	-0.459	0.059	7.718	<0.001
Total Effect	-0.725	0.032	22.651	<0.001

Source: SmartPLS output, research data processing (2026).

The total indirect effect amounted to -0.459 ($t = 7.718$; $p < 0.001$), whereas the total effect equaled -0.725 ($t = 22.651$; $p < 0.001$); both effects were statistically significant. Numerically, the absolute total indirect effect ($|\beta| = 0.459$) exceeded the corresponding direct effect ($|\beta| = 0.266$). Nevertheless, the two effects cannot be inferred to differ significantly because no formal comparison test was conducted.

Predictive Performance Assessment Using PLSpredict

PLSpredict was used to evaluate predictive performance outside the estimation sample. $Q^2_{\text{predict}} > 0$ was treated as evidence of predictive relevance, while RMSE and MAE compare the prediction-error values generated by the PLS model relative to corresponding errors from the linear model (LM) (J. Hair & Alamer, 2022; Hair, Joseph; Hult, Tomas; Ringle, Christian; Sarstedt, 2022).

Table 9. Summary of PLSpredict Results

Construct	Q^2_{predict} Range	$Q^2_{\text{predict}} > 0$	PLS RMSE < LM	PLS MAE < LM
Compensation (Z1)	0.146–0.406	6/6	6/6	6/6
Job Satisfaction (Z2)	0.172–0.389	6/6	6/6	5/6
Turnover Intention (Y)	0.172–0.443	6/6	6/6	6/6

Source: SmartPLS output, research data processing (2026).

Each of the 18 endogenous indicators produced Q^2_{predict} values above zero. PLS RMSE fell below the LM across all indicators, whereas PLS MAE was smaller for 17 of 18 indicators. The only exception was Z2.3, with a difference of only 0.001 (0.500 vs. 0.499).

Cross-Validated Predictive Ability Test

CVPAT tests whether out-of-sample prediction loss from PLS-SEM is statistically below the loss from a benchmark or competing model (Liengaard et al., 2021; Sharma et al., 2023).

Table 10. CVPAT Results

Benchmark	Construct	PLS Loss	Benchmark Loss	Average Loss Difference	t-value	p-value
IA	Compensation (Z1)	0.538	0.751	-0.213	5.224	<0.001

Benchmark	Construct	PLS Loss	Benchmark Loss	Average Loss Difference	t-value	p-value
	Job Satisfaction (Z2)	0.537	0.752	-0.215	4.824	<0.001
	Turnover Intention (Y)	0.532	0.799	-0.267	5.349	<0.001
	Overall	0.536	0.768	-0.232	6.102	<0.001
LM	Compensation (Z1)	0.538	0.559	-0.021	2.081	0.039
	Job Satisfaction (Z2)	0.537	0.568	-0.031	3.223	0.002
	Turnover Intention (Y)	0.532	0.563	-0.031	3.868	<0.001
	Overall	0.536	0.563	-0.027	4.547	<0.001

Source: SmartPLS output, research data processing (2026).

All average loss differences relative to the indicator average (IA) benchmark were negative and statistically significant, with an overall PLS–IA loss difference of -0.232 ($t = 6.102$; $p < 0.001$). Relative to the LM, the overall loss difference was also negative and significant (-0.027 ; $t = 4.547$; $p < 0.001$), as were the differences for each of the three endogenous constructs. Collectively, these findings show that PLS-SEM achieved superior predictive performance relative to both benchmarks (Liengard et al., 2021; Sharma et al., 2023) and reinforce the PLSpredict evidence.

Discussion

Continuous Training and Turnover Intention

H1 was supported by the negative Continuous Training coefficient for turnover intention, where $\beta = -0.266$ ($t = 3.802$; $p < 0.001$). Under Job Demands–Resources (JD-R) Theory, training is treated as an organizational resource for strengthening employee competence and managing job demands (Bakker et al., 2023; Demerouti & Bakker, 2023). This result accords with Albtoosh et al. (2022), and a comparable mechanism was reported by Martini et al. (2023), linking organizational investment directed toward employee development to lower levels of turnover intention through psychological processes. Thus, training functions as more than a competence-building resource and also as a form of organizational provision for employee development.

Continuous Training and Compensation

Continuous Training showed a positive association with Compensation ($\beta = 0.706$; $t = 18.262$; $p < 0.001$), supporting H2. Because Compensation in this study represents employees' perceptions of the organizational reward system rather than objective remuneration levels, this result should not be taken to imply that training causally increases compensation. Instead, it indicates that favorable evaluations of developmental resources are associated with more favorable evaluations of organizational reward resources. From a JD-R perspective, both can be understood as interconnected job resources that jointly shape employees' organizational experiences (Bakker et al., 2023; Demerouti & Bakker, 2023). Memon et al. (2021) examined training satisfaction and pay satisfaction as distinct aspects of human resource management, the present study identifies a positive statistical association between employees' evaluations of continuous training and perceived compensation. However, the cross-sectional design does not establish a causal relationship between these constructs. Nevertheless, temporal causality cannot be established with the cross-sectional design.

Continuous Training and Job Satisfaction

H3 was supported by a positive Continuous Training–Job Satisfaction coefficient ($\beta = 0.718$, $t = 17.093$, $p < 0.001$), while the structural effect was large ($f^2 = 1.061$). The finding is consistent with Pinnington et al. (2024). In JD-R terms, training provides developmental resources that strengthen employee competence and the capacity to cope with job demands; therefore, more favorable evaluations of training tend to coincide with greater job satisfaction.

Compensation and Turnover Intention

H4 was confirmed by the negative Compensation coefficient for turnover intention, with $\beta = -0.310$ ($t = 4.061$; $p < 0.001$). This result accords with Gunawan et al. (2024) and Yhanti & Hermina (2025), yet contrasts with Hanifa et al. (2024), who failed to identify a statistically significant direct association and instead found an indirect relationship through Job Satisfaction. These differences may reflect variations in organizational contexts, sample characteristics, and the operationalization of compensation. Further comparative research is needed to determine whether these factors account for the inconsistent findings.

Job Satisfaction and Turnover Intention

An inverse Job Satisfaction–turnover intention coefficient ($\beta = -0.335$; $t = 5.108$; $p < 0.001$) provided support for H5, aligning with Hanifa et al. (2024), Gunawan et al. (2024), and Bede et al. (2022). Under JD-R Theory, job satisfaction reflects a positive affective evaluation that may emerge when organizational resources support employees' needs and help them cope with job demands. Accordingly, the quality of employees' work experiences remains an important factor associated with their inclination to maintain the employment relationship.

Mediating Role of Compensation

H6 was supported by a significant negative indirect effect from Continuous Training on turnover intention through Compensation ($\beta = -0.218$; $p < 0.001$). Since the two effects both reached significance and were negative, this pattern satisfied the criterion for complementary mediation (J. F. Hair et al., 2021).

This finding represents one of this study's main contributions. Hanifa et al. (2024) previously integrated compensation, training, job satisfaction together with turnover intention within a single framework, but positioned compensation and training as parallel antecedents, with job satisfaction as the principal mediator. The current study examines an alternative configuration by positioning Compensation as one of two parallel mediators within the Continuous Training–turnover intention relationship.

Substantively, employees' evaluations of the organizational reward system constitute one route linking Continuous Training with turnover intention. However, given the cross-sectional data, this mediating pattern should be interpreted as a structural mechanism compatible with the proposed theoretical model, not as definitive evidence of a temporally ordered causal sequence.

Mediating Role of Job Satisfaction

H7 was supported by a significant negative indirect effect from Continuous Training to turnover intention, mediated by Job Satisfaction; β was -0.240 and $p < 0.001$. Because both effects reached statistical significance and carried an identical sign, this pathway also met the criterion for complementary mediation (J. F. Hair et al., 2021).

This result is corroborated by Hanifa et al. (2024), who documented a significant indirect training-to-turnover-intention effect through job satisfaction ($\beta = -0.073$; $p = 0.038$). Their model, however, showed that the direct training–turnover intention coefficient was positive ($\beta = 0.186$; $p = 0.029$). By contrast, the present study found both the direct and mediated effects to be negative. Such a difference indicates that the retention implications of training can differ according to the configuration of organizational resources, job characteristics, and organizational context.

Related evidence was provided by Martini et al. (2023), who found that intervening psychological mechanisms transmit much of the link connecting employees' perceptions of organizational investment in their development with employees' intention to leave, particularly affective commitment together with perceived external employability. The present analysis

extends this explanation by identifying Job Satisfaction as an additional relevant affective pathway connecting Continuous Training to turnover intention.

Total Effect of Continuous Training on Turnover Intention

Together, the total indirect effect, $\beta = -0.459$ ($t = 7.718$; $p < 0.001$), and the total effect, $\beta = -0.725$ ($t = 22.651$; $p < 0.001$), indicate that Continuous Training relates to turnover intention through both a direct path and the two mediator-specific paths. Numerically, the absolute total indirect effect ($|\beta| = 0.459$) exceeded the corresponding direct effect ($|\beta| = 0.266$). However, whether the two effects differ significantly in magnitude cannot be determined because no formal contrast test was conducted. These findings further clarify the complementary mediation pattern and the interrelated configuration of organizational resources.

Synthesis of Findings and Research Novelty

Overall, Continuous Training was linked to turnover intention through one direct pathway and two indirect routes involving Compensation and Job Satisfaction. This configuration extends prior findings on employee loyalty (Albtoosh et al., 2022), affective commitment and perceived external employability (Martini et al., 2023), together with job satisfaction (Hanifa et al., 2024) as mediating mechanisms.

The primary empirical novelty lies in a JD-R-based parallel dual-mediation mechanism in which Compensation represents employees' evaluation of organizational reward resources, whereas Job Satisfaction represents an affective evaluation of work experience. Together, these two mediators simultaneously form substantively meaningful indirect mechanisms.

The predictive assessment provides additional support for the model, which accounted for 66.0% of turnover-intention variance ($R^2 = 0.660$); each of the 18 endogenous indicators produced Q^2_{predict} values above zero; PLS RMSE values were below the LM values for every indicator; and PLS MAE values were lower for 17 of the 18 indicators, with only a 0.001 difference for Z2.3. CVPAT also showed that PLS-SEM generated a significantly smaller prediction loss relative to both the indicator-average and linear-model benchmarks. Accordingly, this model demonstrates both explanatory performance and out-of-sample prediction capability; however, this predictive assessment should be regarded as a methodological strengthening rather than as the study's substantive novelty.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

The results show an inverse Continuous Training–turnover intention relationship alongside positive associations of Continuous Training with Compensation and Job Satisfaction, while both mediators are inversely related to turnover intention. Compensation and job satisfaction jointly form a complementary parallel mediation pattern. The total indirect effect was -0.459 , while the total effect was -0.725 . These findings indicate that continuous training is associated with turnover intention through both direct and indirect pathways. Theoretically, these results extend the explanatory application of Job Demands–Resources Theory through a parallel dual-mediation model in which Compensation represents employees' evaluation of organizational reward resources, whereas Job Satisfaction captures an affective evaluation of work experience. The model explains 66.0% of turnover-intention variance and demonstrates consistent predictive performance beyond the estimation sample through PLS_{predict} and CVPAT. Overall, all hypothesized relationships received empirical support, suggesting that Continuous Training is better understood as part of an integrated configuration of organizational resources rather than as an independent retention practice.

Limitations

This study is limited to a single mineral processing company; therefore, generalization to other organizations or industries needs to be undertaken cautiously. Given its cross-sectional design, the temporal ordering among the relationships cannot be determined; moreover, dependence on measures reported by respondents means that possible common method bias remains despite the use of PCA as an initial diagnostic screening procedure. In addition, Compensation represents employees' perceptions of the compensation system rather than objective compensation levels, and a direct contrast test was not conducted between the two specific indirect effects. Consequently, numerical differences in the magnitudes of the mediation effects cannot be interpreted as statistically significant differences.

Recommendations

PT Merdeka Tsingshan Indonesia is advised to manage continuous training as part of an integrated retention strategy that is aligned with the compensation system and efforts to enhance job satisfaction. Training programs should maintain their relevance, quality, accessibility, and contribution to work effectiveness, while the compensation system should be designed and communicated in ways that employees perceive as competitive, fair, and transparent. These efforts should be supported by effective supervision, favorable working conditions, development opportunities, and appropriate recognition.

The evaluation of training programs should not be limited to the number of programs implemented or participants' satisfaction with training, but should also consider their relationships with employees' perceptions of organizational rewards, job satisfaction, and retention-related indicators. Future research should extend the analysis to multiple organizations and sectors, employ longitudinal or time-lagged designs, combine perceptual measures with objective data such as actual compensation and employee turnover records, and conduct formal contrast tests of the two specific indirect effects to establish whether the two mediation mechanisms differ significantly.

Author Contributions

The authors contributed substantively to conceptualizing the study, designing and developing the research model and instrument, gathering and analyzing the data, interpreting the results, preparing the manuscript and conducting critical revisions. All authors gave approval to the final version for publication.

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