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Diversity, Equity, Inclusion and Employee Job Satisfaction at PT Vale Indonesia Sorowako

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Abstract

Background: Diversity, equity, and inclusion (DEI) may relate to job satisfaction, but their separate associations require examination in specific organizational settings. Indonesian mining provides a relevant context for assessing employees' perceptions alongside formal organizational commitments.
Objective: This study estimates the separate associations of perceived diversity, equity, and inclusion with job satisfaction among permanent employees at PT Vale Indonesia Tbk Sorowako.
Methods: A cross-sectional online survey of 100 permanent employees used 24 items rated on a five-point Likert scale. Partial Least Squares–Structural Equation Modeling in SmartPLS estimated three reflective predictors and one outcome. No combined or higher-order DEI construct was tested. Sampling documentation and several model diagnostics were unavailable for verification.
Results: Reported loadings, reliability coefficients, and average variance extracted supported internal consistency and convergent validity. Diversity ($\beta = 0.260$; $p = 0.002$), equity ($\beta = 0.265$; $p = 0.006$), and inclusion ($\beta = 0.408$; $p < 0.001$) were positively associated with job satisfaction. R^2 was 0.687. Inclusion had the largest estimated coefficient descriptively; differences between coefficients were not tested. HTMT values were below 0.85, but the Fornell–Larcker criterion was not met for job satisfaction relative to inclusion; HTMT confidence intervals and predictive performance remain unverified.
Conclusion: The results support three dimension-specific associations in this sample. They do not establish causality, psychological mechanisms, or superiority over demographic representation or formal policies. Inclusive supervision, transparent opportunity criteria, and repeated perception surveys are proposed for evaluation. Single-company, cross-sectional self-reports and incomplete methodological documentation limit interpretation and generalization.

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INTRODUCTION

Job satisfaction concerns employees' evaluations of their work and is relevant to motivation, commitment, and retention (Judge et al., 2017). A study of Indonesian hotel employees likewise describes job satisfaction as shaped by supervision, advancement opportunities, salary, working conditions, and co-workers (Nurdiana et al., 2021). These evaluations take place within organizational arrangements that distribute opportunities, recognize differences, and determine whose contributions receive attention. Diversity, equity, and

inclusion (DEI) provide related but distinct perspectives on these arrangements. Diversity concerns the recognition of differences in backgrounds and identities; equity concerns fair treatment and access to opportunities; inclusion concerns acceptance, participation, and the valuing of individual contributions. Here, these concepts refer to employee perceptions rather than independently audited organizational practices. Distinguishing them matters because a workforce can be demographically diverse without employees experiencing fair opportunities or meaningful participation. Likewise, an inclusion policy does not demonstrate that every employee experiences inclusion. The present research therefore examines the three perceived dimensions separately in relation to job satisfaction, avoiding the assumption that they constitute a single empirically validated higher-order construct. This approach focuses the research question on associations that the available survey model actually estimates.

Primary research offers useful comparisons but addresses different settings and measurements. Maj (2023) examined perceived diversity and an inclusive work environment in Poland and reported positive relationships with job satisfaction. Emidy et al. (2024) analyzed United States federal employees, focusing on disability and perceptions of diversity, equity, inclusion, and accessibility alongside several job attitudes. Setiani et al. (2026) studied female-led creative-sector enterprises in East Java and reported that female leadership competence was positively associated with job satisfaction and that job satisfaction was positively associated with performance, without measuring diversity, equity, or inclusion. Khan and Ulya (2024) surveyed halal-certified firms in Indonesia and reported positive associations of workforce diversity and inclusive HR practices with organizational performance, an organizational rather than employee-attitude outcome. Nurdiana et al. (2021) examined hotel employees in Surabaya and reported that workplace bullying was positively associated with turnover intention, whereas job satisfaction did not significantly moderate that relationship; their focus was mistreatment rather than DEI perceptions. The Polish and U.S. studies concern national workforce or public-sector settings, and the Indonesian studies address other industries and outcomes, whereas the present model addresses permanent employees in one Indonesian mining operation and estimates diversity, equity, and inclusion as separate predictors of job satisfaction. Chung et al. (2020) developed a ten-item work group inclusion measure organized around belongingness and uniqueness. Their scale-validation research clarifies what inclusion can mean operationally, but it does not establish that this manuscript's five inclusion items reproduce that instrument. Together, these comparisons support attention to employee perceptions while also showing why differences in context, construct specification, and measurement prevent direct comparisons of coefficient magnitudes. The present contribution is consequently contextual and model-specific rather than a claim to discover a previously unstudied universal relationship.

Social exchange theory and self-determination theory provide interpretive frameworks for the proposed associations. Following the account of social exchange reviewed by Ahmad et al. (2023), perceived recognition of diversity could be interpreted as respectful organizational treatment, while equity could be interpreted as fair access to valued opportunities. Both may accompany favorable evaluations of work. Self-determination theory, as discussed by Liu et al. (2025) and Novrianzah and Andrias (2025), suggests that acceptance and opportunities to express views may be relevant to relatedness and autonomy. Inclusion therefore offers a plausible connection with job satisfaction through everyday participation. These propositions motivate the direction of the three hypotheses, but the questionnaire model does not measure reciprocity, organizational care, autonomy, competence, or relatedness as separate mediators. It cannot identify which psychological process explains an observed association or demonstrate that the dimensions operate through different mechanisms. The theories are used to interpret compatible patterns and identify future tests, rather than to claim that a mediation model has been estimated or that theoretical mechanisms have been confirmed.

The mining context makes these questions practically relevant. Balogun et al. (2020) examined safety climate, job satisfaction, and turnover intention among stone, sand, and gravel mine workers, linking satisfaction to organizational conditions with direct operational significance. This evidence concerns safety-related experiences rather than the three-dimensional DEI specification used here. Kansake et al. (2021) documented challenges facing female mining stakeholders, supporting attention to gender inclusion without establishing the satisfaction level of employees at Sorowako. PT Vale Indonesia's policy articulates commitments to respectful

treatment, psychological safety, and processes free from bias Indonesia (2024). Its 2022 sustainability report records 2,934 employees, including 256 women and four employees with disabilities (Indonesia, 2023). These are historical company-level figures, not demographic observations from the present sample. The manuscript separately reports an eligible population of 3,038 permanent employees at Sorowako, but supplies neither its reference date nor its administrative source. Differences in period, employment scope, and organizational coverage therefore cannot be reconciled. The historical figures provide context and should not be treated as the demographic composition of the survey population.

The unresolved question is how the three perceived DEI dimensions relate to satisfaction within this particular operation when included in the same model. The literature discussed here was selected for thematic relevance to employee perceptions, mining work, and job attitudes; a reproducible original search log, database-specific strategy, search dates, and screening counts were not supplied. Accordingly, this narrative comparison does not demonstrate that DEI research is absent from Indonesian mining or that no earlier study has estimated comparable paths. Its narrower basis is that Balogun et al. (2020), Emidy et al. (2024), Maj (2023), investigate different organizational contexts, constructs, or relationships. The present research adds a simultaneous estimation of three perceived DEI dimensions for a sample from Sorowako. Edmans et al. (2023), an NBER working paper rather than a peer-reviewed journal article in the cited version, additionally motivates distinguishing employee perceptions from representation and policy measures. The current survey does not compare those measures directly and cannot establish which category matters more for satisfaction.

This study asks whether perceived diversity, equity, and inclusion are each positively associated with employee job satisfaction at PT Vale Indonesia Tbk Sorowako and how their estimated coefficients compare descriptively. Its objective is to estimate the three direct relationships without imposing an untested combined DEI hypothesis. The urgency is practical: management needs evidence about employees' experiences when deciding how to assess the implementation of formal commitments. However, no local satisfaction prevalence, organizational shortfall, or intervention effectiveness is assumed in advance. The empirical benefit is a bounded account of associations among the surveyed employees; the theoretical benefit is identifying patterns that warrant subsequent tests of exchange and psychological needs explanations. Potential managerial implications concern inclusive supervision, transparent criteria for assignments and promotion, and repeated monitoring of perceptions. These remain proposals for evaluation rather than proven remedies. The contextual novelty lies in the location and dimensional specification, while limitations in sampling documentation, instrument provenance, discriminant validity, and causal identification constrain the strength of the contribution and its transfer to other mining workforces.

METHOD

This quantitative explanatory survey employed a cross-sectional design, with individual employees serving as the unit of analysis. Perceived diversity (X1), equity (X2), and inclusion (X3) were treated as three separate predictors of job satisfaction (Y). The study was conducted at PT Vale Indonesia Tbk in Sorowako, East Luwu Regency. The design estimated contemporaneous associations and did not identify causal effects. The fieldwork dates were not documented in the supplied materials.

The manuscript reported a population of 3,038 permanent employees and 100 analyzed respondents. Using the formula $n = N/(1 + Ne^2)$, where N = 3,038 and e = 0.10, yielded a sample size of 96.81, which was rounded upward to 100 (Sugiyono, 2019). The 10% parameter represented a relatively loose nominal precision choice; its original practical rationale was not documented, and it did not provide a confidence interval for latent path coefficients. Simple random sampling was reported, but the dated employee roster, source of the population count, random selection procedure, invitation total, number of returned questionnaires, exclusions, and nonresponse handling were not supplied. Consequently, equal selection probabilities and the response rate could not be verified, and representativeness was not established. A sample-size formula alone does not demonstrate PLS-SEM statistical power (Kock & Hadaya, 2018). As an illustrative sensitivity calculation, an ordinary three-predictor fixed-effects regression with N = 100, $\alpha = 0.05$, and 80% power yielded a minimum detectable omnibus f^2 of approximately 0.114,

based on solving $Pr[F(3,96,\lambda = 100f^2) > F_{0.95}(3,96)] = 0.80$. This assumption-based benchmark was neither an a priori power analysis nor a PLS-specific simulation, and it did not establish adequate power for each latent path. The expected smallest path was not documented; prospective PLS-SEM planning should specify this target and account for measurement quality (Kock & Hadaya, 2018).

The online questionnaire contained 24 items scored on a five-point scale: five items each for diversity (DI1–DI5), equity (EQ1–EQ5), and inclusion (IC1–IC5), and nine items for job satisfaction (KK1–KK9). Conceptually, diversity concerns recognized differences, equity concerns fair treatment and opportunity, inclusion concerns acceptance and participation, and job satisfaction concerns evaluations of work. All four constructs were specified as reflective, with items treated as manifestations of underlying perceptions. This specification remained provisional because the item wording, original scale sources, response-anchor labels, questionnaire language, adaptation procedure, pilot records, and content-validation evidence were not supplied. Chung et al. (2020) provides a validated inclusion measure for comparison, but is not asserted to be the source of the present five-item scale. For job satisfaction, Setiani et al. (2026) used the work itself, wages, promotion, coworkers, and supervisor as indicators, and Nurdiana et al. (2021) summarize similar determinants; these sources are cited for comparison and are not asserted to be the source of items KK1–KK9. Without the item wording, conceptual overlap and indicator interchangeability could not be fully assessed.

The estimable hypotheses were H2: perceived diversity was positively associated with job satisfaction; H3: perceived equity was positively associated with job satisfaction; and H4: perceived inclusion was positively associated with job satisfaction. The original labels H2–H4 were retained for traceability. H1, which proposed an overall DEI effect, was withdrawn because no higher-order construct or corresponding overall hypothesis test was estimated. Figure 1 was retained as a conceptual grouping of the three dimensions; its DEI boundary did not represent a separately estimated latent predictor or establish an overall DEI effect.

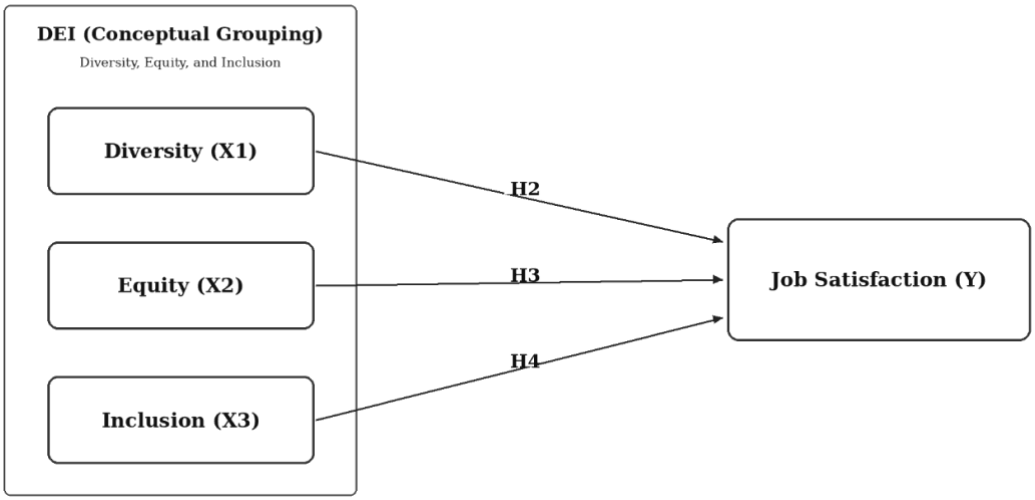

Figure 1. Theoretical Framework

PLS-SEM in SmartPLS was used to estimate the measurement and structural models (Ghozali, 2021; Hair et al., 2019). The available results comprised item loadings, construct reliability, AVE, R^2, and three bootstrap path summaries. Respondent profiles, item response distributions, and construct means and standard deviations were not supplied; therefore, descriptive findings could not be reconstructed or used to assess sample representativeness. The software version and original project settings were also unavailable.

The first stage involved evaluating the measurement model (outer model). Convergent validity was assessed through outer loadings and average variance extracted (AVE). Outer loadings ideally have a minimum value of 0.708 Hair et al. (2022), although values between 0.60 and 0.70 may still be acceptable if the construct meets other validity and reliability criteria (Ghozali, 2021). An AVE minimum of 0.50 indicates that a construct explains more than half of the variance in its indicators. Reliability was assessed through Cronbach's alpha, rho_A, and

composite reliability, with a minimum threshold of 0.70 (Hair et al., 2022). Discriminant validity was assessed with HTMT, the Fornell–Larcker criterion, and cross-loadings. HTMT below 0.85 is preferred under a conservative criterion and below 0.90 may be tolerated for closely related constructs, with bootstrap inference in which the confidence interval excludes 1 (Hair et al., 2022). Under the Fornell–Larcker criterion, the square root of each construct's AVE should exceed its correlations with the other constructs, and each indicator should load most strongly on its own construct (Hair et al., 2022). HTMT point estimates were available in the output, but bootstrap confidence intervals for HTMT were not supplied. Reliability and AVE alone cannot establish construct distinctness.

The structural model assessment reported R^2 and adjusted R^2 as in-sample explanatory measures and evaluated H2–H4 using the reported standardized path coefficients, t-statistics, and two-tailed p-values at $\alpha = 0.05$. Neither R^2 nor the significance of individual paths tests a higher-order DEI hypothesis. A complete assessment should also include inner VIF, predictor-specific $f^2 = (R^2 \text{ included} - R^2 \text{ excluded})/(1 - R^2 \text{ included})$, and an out-of-sample predictive assessment or appropriately calculated Q^2 (Hair et al., 2022). Predictor correlations, excluded-predictor models, prediction results, the bootstrap subsample count, random seed, resampling settings, and empirical confidence intervals were not supplied. These values and results could not be inferred reliably from the published summaries. No new bootstrap run, collinearity test, predictive test, or coefficient-difference test was claimed.

Respondent participation was voluntary, respondent identities were kept confidential, and the data were used exclusively for academic purposes. Data collection was carried out in accordance with the research permit and approval procedures of PT Vale Indonesia.

RESULTS AND DISCUSSION

Results

The available SmartPLS summaries describe 100 permanent-employee responses. Results are organized into measurement and structural assessments. Numerical values in Tables 1–6 and both figures are taken from the SmartPLS output, apart from reporting $p = 0.000$ as $p < 0.001$. No respondent-level dataset was supplied. Consequently, demographic composition, response distributions, construct means and standard deviations, and subgroup representativeness cannot be reported as observed results. The interpretation below distinguishes documented estimates from missing diagnostics and theoretical explanations.

Evaluation of the Measurement Model (Outer Model)

The evaluation of the measurement model begins by examining outer loading, that is, how strongly each indicator reflects the construct it measures. As seen in Table 1, all indicators have loadings between 0.600 and 0.907. In the Diversity (X1) construct, values range from 0.600–0.813; DI3 is the strongest indicator (0.813), while DI1 (0.600) and DI2 (0.618) are the lowest. The Equity (X2) construct ranges from 0.756–0.887, with EQ4 highest (0.887). The Inclusion (X3) construct shows the tightest distribution, namely 0.807–0.907, and IC5 (0.907) is the highest value in the entire model. Meanwhile, job satisfaction (Y) ranges from 0.637 (KK7) to 0.842 (KK1).

Table 1
Outer Loading Results

	Diversity (X1)	Equity (X2)	Inclusion (X3)	Job Satisfaction (Y)
DI1	0.600			
DI2	0.618			
DI3	0.813			
DI4	0.779			
DI5	0.790			
EQ1		0.756		
EQ2		0.838		
EQ3		0.811		
EQ4		0.887		
EQ5		0.765		
IC1			0.807	

Diversity (X1)	Equity (X2)	Inclusion (X3)	Job Satisfaction (Y)
IC2		0.838	
IC3		0.811	
IC4		0.861	
IC5		0.907	
KK1			0.842
KK2			0.838
KK3			0.727
KK4			0.761
KK5			0.680
KK6			0.738
KK7			0.637
KK8			0.777
KK9			0.746

DI1 (0.600), DI2 (0.618), KK5 (0.680), and KK7 (0.637) fall below the preferred loading of 0.708. Indicators in this range should not be retained solely because AVE exceeds 0.50; decisions should also consider content coverage and the consequences of deletion for reliability and validity (Hair et al., 2022). They are retained here to preserve the reported model rather than imply an undocumented re-estimation. Item wording and deletion analyses were unavailable, so their substantive necessity cannot be verified. Indicator retention and the reflective specification remain provisional pending examination of the questionnaire and comparison of alternative specifications.

Table 2
Reliability and Convergent Validity Test Results

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Diversity (X1)	0.772	0.796	0.846	0.527
Equity (X2)	0.871	0.876	0.907	0.661
Inclusion (X3)	0.900	0.903	0.926	0.715
Job Satisfaction (Y)	0.903	0.907	0.921	0.566

Table 2 shows that all constructs meet the reliability criteria. Cronbach's alpha values range from 0.772 (Diversity) to 0.903 (job satisfaction) and rho_A values range from 0.796 to 0.907, all above the 0.70 threshold, so the indicators in each construct are considered internally consistent. Composite reliability is also adequate, namely 0.846 for Diversity, 0.907 for Equity, 0.926 for Inclusion, and 0.921 for job satisfaction. Diversity has the lowest reliability among the three, consistent with the low loadings of DI1 and DI2 in Table 1, but it is still acceptable.

AVE exceeds 0.50 for diversity (0.527), equity (0.661), inclusion (0.715), and job satisfaction (0.566), supporting convergent validity in the reported model. Together with Table 2's reliability coefficients, these results establish internal consistency and convergence only. They do not by themselves demonstrate discriminant validity or appropriate content coverage; discriminant validity is therefore assessed separately below.

Discriminant Validity

Table 3
Discriminant Validity Test Results (Fornell–Larcker Criterion)

	Diversity (X1)	Equity (X2)	Inclusion (X3)	Job Satisfaction (Y)
Diversity (X1)	0.726			
Equity (X2)	0.671	0.813		
Inclusion (X3)	0.646	0.719	0.845	
Job Satisfaction (Y)	0.700	0.732	0.765	0.752

Note. Source: SmartPLS output. Diagonal entries are the square roots of AVE; off-diagonal entries are correlations between constructs

Table 3 reports the Fornell–Larcker criterion. It is satisfied for diversity (square root of AVE = 0.726), equity (0.813), and inclusion (0.845), because each exceeds the construct's correlations with the other constructs. It is not satisfied for job satisfaction: its square root of AVE (0.752) is lower than its correlation with inclusion (0.765). This is consistent with the comparatively low AVE of job satisfaction (0.566) and indicates that inclusion and job satisfaction share substantial variance. The shortfall is reported rather than set aside, and the HTMT results below are treated as the primary evidence because HTMT is the criterion emphasized by (Hair et al., 2022).

The cross-loadings in the SmartPLS output, which are not tabulated here, show that each of the 24 indicators loads more strongly on its own construct than on any other construct. This supports indicator-level discrimination, but it does not offset the Fornell–Larcker shortfall at the construct level.

Heterotrait–Monotrait Ratio (HTMT)

Table 4

Heterotrait–Monotrait Ratio (HTMT) Test Results

	Diversity (X1)	Equity (X2)	Inclusion (X3)	Job Satisfaction (Y)
Diversity (X1)				
Equity (X2)	0.791			
Inclusion (X3)	0.764	0.805		
Job Satisfaction (Y)	0.824	0.814	0.845	

Note. Source: SmartPLS output. Entries are HTMT values; the upper triangle is omitted because the matrix is symmetric

Table 4 reports HTMT. All values fall below 0.85: diversity–equity 0.791, diversity–inclusion 0.764, equity–inclusion 0.805, diversity–job satisfaction 0.824, equity–job satisfaction 0.814, and inclusion–job satisfaction 0.845. The largest value, for inclusion and job satisfaction, lies only slightly below the conservative threshold, so the margin is narrow, although it is below the 0.90 threshold for closely related constructs. The values among the three DEI dimensions (0.764–0.805) support treating them as separate predictors, although their closeness indicates that the perceptions are strongly related.

Bootstrap confidence intervals for HTMT were not supplied, so the criterion that the interval excludes 1 could not be evaluated and the HTMT results are point estimates. Taken together with the Fornell–Larcker results, the evidence supports empirical separation of the constructs at the level of HTMT point estimates and cross-loadings, but not unequivocally: the Fornell–Larcker shortfall and the narrow HTMT margin for inclusion and job satisfaction call for caution. The path from inclusion is therefore interpreted as an association between closely related perceptions rather than between fully separable constructs.

Table 5

Coefficient of Determination (R Square)

	R Square	R Square Adjusted
Job Satisfaction (Y)	0.687	0.678

Table 5 reports R^2 = 0.687 and adjusted R^2 = 0.678 for job satisfaction. The three predictors account for 68.7% of its in-sample variance; 31.3% remains unexplained. This residual is not a measured contribution from identified omitted variables. The modest adjustment for model size does not establish that adding predictors significantly improves fit, and R^2 does not demonstrate predictive performance on new employees. Under the descriptive benchmarks in Hair et al., (2022), explanatory power lies between moderate and substantial. The unavailable predictor correlations and reduced-model estimates prevent reporting VIF and individual f^2 values. Q^2 and out-of-sample predictive performance likewise remain unassessed.

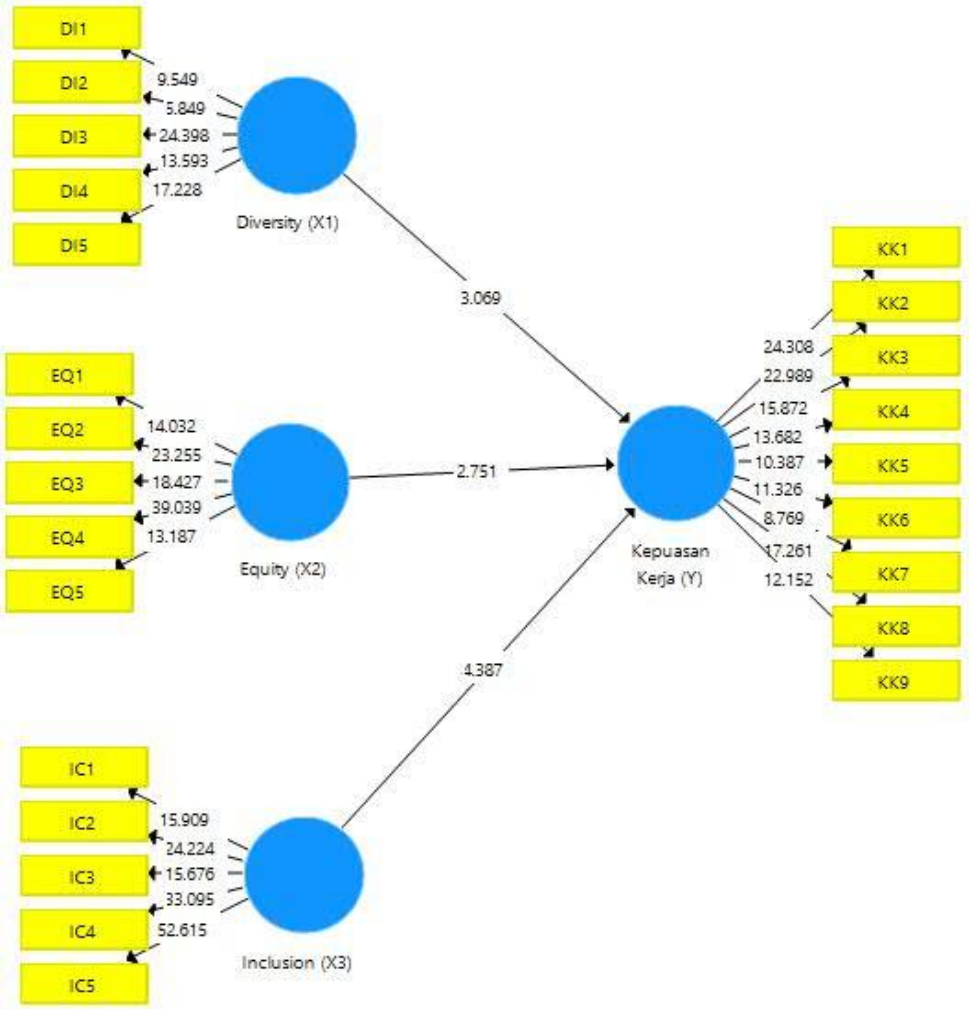

Figure 2. Research Model Results

Figure 2 retains the reported model estimates, and Table 6 summarizes the available bootstrap output. Diversity (β = 0.260; t = 3.069; p = 0.002), equity (β = 0.265; t = 2.751; p = 0.006), and inclusion (β = 0.408; t = 4.387; p < 0.001) show positive dimension-specific associations at the stated 5% level, supporting H2–H4 in the reported analysis. Inclusion has the largest estimated coefficient descriptively. Neither pairwise coefficient contrasts nor their uncertainty were supplied, so a statistically stronger inclusion relationship is not established.

Table 6
Results of Path Coefficient Test (Path Coefficients) through Bootstrapping

Relationship	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Diversity (X1) -> Job Satisfaction (Y)	0.260	0.260	0.085	3.069	0.002
Equity (X2) -> Job Satisfaction (Y)	0.265	0.270	0.096	2.751	0.006
Inclusion (X3) -> Job Satisfaction (Y)	0.408	0.412	0.093	4.387	< 0.001

In Table 6, O is the original standardized path estimate, M is its mean across bootstrap samples, and STDEV is the reported bootstrap standard deviation. The t-statistic is approximately |O/STDEV|; small discrepancies can arise from rounding. Under the null hypothesis and the stated test assumptions, a two-tailed p-value is the probability of a test statistic at least as extreme as observed. It is not the probability that the null hypothesis is true. Similar O and M values suggest little apparent bootstrap mean bias, but do not establish sampling stability, normality, or interval coverage. Empirical bootstrap confidence intervals cannot be recovered from these summary

statistics alone.

All three standardized paths are positive. Conditional on the other two dimensions in this model, a one-standard-deviation difference in perceived inclusion is associated with a 0.408-standard-deviation difference in job satisfaction; this is not an estimate of the change caused by an intervention. Equity has the largest reported standard error (0.096), while inclusion has the smallest reported p-value. Neither fact tests differences between path coefficients. Only H2–H4 correspond to estimated relationships. H1 is withdrawn, and no overall DEI effect is inferred from R^2 or from the three individual significance tests.

Discussion

The central finding is a set of positive associations between perceived diversity, equity, inclusion, and job satisfaction in the surveyed employees. The discussion considers compatible explanations, differences from prior research, and the boundaries of inference. Inclusion has the largest estimated coefficient descriptively; superiority over the other dimensions has not been established statistically. Inclusion and Job Satisfaction

Inclusion has the largest estimated coefficient in this sample. Self-determination theory, as discussed by Liu et al. (2025), offers a possible interpretation involving relatedness and autonomy, but neither need was measured here. Randel (2025) highlights belonging and valued uniqueness, while Chung et al. (2020) operationalizes these components in a validated ten-item work group measure. These perspectives suggest why acceptance and participation might accompany favorable job evaluations. They do not validate the present five-item instrument or demonstrate that psychological need satisfaction mediates the reported path. That explanation requires direct measurement and temporal evidence.

Maj (2023) reports positive relationships between an inclusive work environment, perceived diversity, and job satisfaction in Poland. The present simultaneous model is compatible with that direction, but uses a different setting and specification. Coefficient magnitudes cannot be compared directly across the two studies without establishing measurement comparability. Setiani et al. (2026) interpret participatory, communicative leadership that leaves employees feeling valued and listened to as accompanying higher job satisfaction among Indonesian creative-sector employees; that evidence concerns leadership competence rather than inclusion and offers only indirect support for a participation-related interpretation. Nurdiana et al. (2021) address negative interpersonal treatment and did not measure inclusion. In Sorowako, daily acceptance and participation could be particularly relevant to employees' work evaluations. However, organizational location and workforce history are contextual considerations, not tested moderators. The coefficient ordering could also reflect indicator quality, overlap among predictors, or sampling variation. The HTMT value for inclusion and job satisfaction (0.845) lies close to the conservative 0.85 threshold, and the Fornell–Larcker criterion was not met for job satisfaction. These alternatives make collinearity assessment, and a bootstrap contrast between paths necessary before claiming that inclusion is statistically more influential.

Diversity and Equity Associations

Diversity is positively associated with satisfaction (β = 0.260). Historical company representation figures for 2022 cannot characterize the survey sample or explain this coefficient because employee group membership and current demographic composition were not analyzed. Edmans et al. (2023), in the cited working-paper version, distinguishes employee-based DEI perceptions from demographic measures. Emidy et al. (2024) examines DEIA perceptions and job attitudes among federal employees with disabilities, a different population and construct specification. Khan and Ulya (2024) report a positive diversity association with organizational performance in Indonesian halal firms; the outcome and measurement differ, so the comparison concerns direction only. These comparisons support careful separation of perceived experiences and representation. They do not establish that perceptions outperform policies or demographic composition in the present company, where no such comparison was estimated.

Equity is also positively associated with satisfaction (β = 0.265). Social exchange, as reviewed by Ahmad et al. (2023), provides a possible explanation: employees may interpret fair opportunities as favorable organizational treatment. Balogun et al. (2020) links safety climate, satisfaction, and turnover intention in mining, suggesting that organizational experiences can

matter for job attitudes. However, safety climate is distinct from equity, and organizational care and reciprocity were not observed as mediators here. The present path therefore supports a conditional association rather than the proposed exchange mechanism. Because Setiani et al. (2026) operationalize wages and promotion as indicators of job satisfaction, equity-related opportunity conditions may overlap conceptually with satisfaction itself; item wording would be needed to assess this possibility. Its similarity to the diversity coefficient is descriptive and does not demonstrate equivalence. Novelty and Theoretical Implications

The contribution is a simultaneous estimation of three perceived DEI dimensions in one Indonesian nickel-mining setting. It complements, rather than supersedes, prior research on inclusive work environments, disability-related DEIA perceptions, and mining safety climate. No exhaustive literature search was documented, so priority or uniqueness across the whole mining literature is not claimed. Social exchange and self-determination perspectives help formulate plausible explanations, but the results do not distinguish pathways through organizational care, relatedness, or autonomy. Future models should measure these mediators explicitly and compare plausible alternatives. The findings identify hypotheses for further work rather than demonstrate an extension of either theory through confirmed psychological mechanisms.

Practical Implications

Management may consider inclusive supervision, transparent assignment and promotion criteria, and periodic surveys of DEI perceptions and satisfaction. These proposals are consistent with the company's policy commitments (PT Vale Indonesia, 2024) but are not tested interventions. Rosari et al. (2025) examines inclusive leadership and workplace happiness in Indonesia; that different outcome and model provide contextual support rather than proof of effectiveness at Sorowako. Khan and Ulya (2024) found a positive association between inclusive HR practices and organizational performance in Indonesian halal firms that organizational culture did not significantly moderate, which suggests, without testing it here, that inclusion initiatives might be evaluated separately from broader cultural conditions. Representation targets remain relevant, because this study does not establish that they are less important than employee perceptions. Any implementation should be evaluated using explicit indicators and comparable measurements rather than assuming the coefficient ordering identifies the best investment. A proposed monitoring plan would record the proportion of supervisors trained, employee-reported opportunities to contribute, the proportion of personnel decisions using published criteria, and complaint-resolution time. Management could establish a baseline and repeat the same validated satisfaction and DEI measures after six and twelve months, reporting participation rates, score uncertainty, and safely aggregated employee-group patterns. Targets should be set after observing the baseline. Changes would be descriptive unless evaluated with a suitable longitudinal comparison design; none of these indicators or follow-up results was observed in this study.

International Relevance

The positive directions are compatible with findings from Poland Maj (2023) and United States federal employment (Emidy et al., 2024). Compatibility across settings is useful, but does not demonstrate cultural universality, measurement invariance, or a shared psychological mechanism. Edmans et al. (2023) provides additional working-paper evidence concerning employee perceptions, whose evidential status should be distinguished from peer-reviewed studies. The present single-operation survey adds bounded contextual evidence. International application would require comparable instruments, multiple sites, and explicit assessment of differences between workforces. Claims about performance, innovation, or retention remain outside this model: although Olusanya (2023) discusses organizational benefits of DEI, Khan and Ulya (2024) link diversity and inclusive practices to organizational performance, Setiani et al. (2026) link job satisfaction to performance, and Nurdiana et al. (2021) examine turnover intention, none of those outcomes was measured in this survey. Limitations of the Study

Cross-sectional data cannot establish temporal order or exclude reverse relationships between satisfaction and DEI perceptions. One company and 100 respondents restrict generalization. Undocumented selection procedures, invitation counts, and nonresponse prevent response-rate calculation and assessment of selection bias; missing demographics prevent

evaluation of employee-group representation. Common questionnaire measurement and social desirability may distort associations Podsakoff et al. (2024), and no diagnostic supplied here resolves these risks. Unavailable item wording and scale provenance limit content validation; the Fornell–Larcker shortfall for job satisfaction, the absence of HTMT confidence intervals, and missing VIF, f^2, prediction results, and bootstrap intervals weaken assessment of construct separation and structural robustness. The model leaves 31.3% of satisfaction variance unexplained. Further work should document recruitment, validate adapted scales, recruit across mining sites, compare path differences directly, and collect longitudinal or mixed-method evidence. Mediation by psychological safety, organizational care, or psychological needs should be tested rather than inferred. Moderators such as organizational culture, examined by Khan and Ulya (2024) in Indonesian halal firms, and mediators such as work motivation, examined by Setiani et al. (2026) could also be modeled alongside DEI perceptions.

CONCLUSION

Perceived diversity, equity, and inclusion were positively associated with job satisfaction among the 100 surveyed permanent employees at PT Vale Indonesia Tbk Sorowako. The reported estimates support H2–H4, with $R^2 = 0.687$ describing in-sample explanatory power. Inclusion has the largest estimated coefficient (0.408), compared with diversity (0.260) and equity (0.265), but differences were not tested. H1 is withdrawn because an overall DEI construct was not estimated. The contribution is contextual evidence on three separate perceptions; social exchange and psychological needs remain interpretive explanations. Inclusive supervision, transparent opportunity criteria, and repeated perception surveys are managerial proposals requiring evaluation.

Interpretation is limited by a single-company cross-sectional design, common-source self-reports, incomplete sampling and instrument documentation, incomplete discriminant-validity evidence (HTMT point estimates below 0.85 without confidence intervals, and a Fornell–Larcker shortfall for job satisfaction), and unavailable collinearity, predictive-performance, and bootstrap-interval evidence. The findings establish neither causality nor superiority of perceptions over policies or demographic representation, and sample representativeness remains unverified. Further research should document recruitment and response rates, validate the measures, include multiple sites and employee groups, and use longitudinal designs. Direct coefficient contrasts and explicit mediation tests are needed to evaluate the coefficient ordering and proposed psychological explanations.

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AUTHOR CONTRIBUTION STATEMENT

Muhammad Naufal Hanif contributed to the conceptualization, research methodology, data collection, data analysis, interpretation of findings, and manuscript preparation. Ryan Basith Fasih Khan contributed to academic supervision, methodological guidance, conceptual development, and manuscript improvement. Both authors approved the final version of the manuscript.

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