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Effect of Performance Feedback on Turnover Intention through Work Engagement among Indonesian Gen-Z Workers: A Bayesian Structural Equation Modeling Analysis

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Abstract: Turnover intention among Generation Z (Gen-Z) is a prominent retention challenge in Indonesia, and the supervisory feedback environment is thought to be one of the levers that can curb it. This study aims to examine whether work engagement mediates the relationship between performance feedback and turnover intention among Indonesian Gen-Z workers. A quantitative cross-sectional design was used with $n = 68$ workers (aged 18 to 28 years, tenure of 6 to 24 months) screened from 102 respondents. Performance feedback was measured with the Feedback Environment Scale, work engagement with the Utrecht Work Engagement Scale-9, and turnover intention with the Turnover Intention Scale. The latent mediation model was estimated using Bayesian Structural Equation Modeling (the blavaan package) with three Markov chain Monte Carlo chains, 3,000 burn-in iterations, 10,000 post-burn-in iterations, and weakly informative priors. All parameters converged ($\text{PSRF} \leq 1.003$; minimum effective sample size of 1,073). Performance feedback positively predicted work engagement ($a = 0.33$; 95% credible interval [0.05; 0.57]), work engagement negatively predicted turnover intention ($b = -0.47$; [-0.68; -0.22]), while the direct path was not credible ($c = -0.24$; [-0.48; 0.02]). The standardized indirect effect was -0.15 ([-0.31; -0.02]; HDI [-0.30; -0.02]) with a posterior probability of $P(\text{effect} < 0) = 0.988$, indicating a pattern consistent with full mediation by work engagement. This inference was robust to prior variation. Exact fit was rejected ($\text{PPP} = 0.008$), and the results are reported transparently. Organizations are advised to build a constructive feedback environment to retain Gen-Z talent.

Keywords: Performance Feedback, Work Engagement, Turnover Intention, Generation Z, Bayesian Structural Equation Modeling.

INTRODUCTION

Generation Z (Gen-Z), the cohort born between 1997 and 2012, has now become an important part of the workforce (Dimock, 2019). Various studies describe them as collaborative, independent, and pragmatic workers (Witte, 2022), although meta-analyses of intergenerational differences in work attitudes caution that such differences need to be

interpreted carefully (Costanza et al., 2012). Nevertheless, one organizational behavior pattern appears consistent: a high tendency to change jobs, or turnover intention (Dolot, 2018; Wibowo et al., 2024). Cross-organizational surveys show that many young workers consider leaving their jobs even before completing two years (Wingard, 2021), with the need for recognition of performance repeatedly cited as one trigger (Miller, 2019). In Indonesia, a similar pattern has been documented among young workers across sectors (Badiah & Rojuaniah, 2024; Rohayati et al., 2022). High turnover intention is not merely an administrative issue; it burdens recruitment costs, erodes knowledge capital, and disrupts team continuity, making the identification of antecedents that can be intervened upon both practically and theoretically important.

One antecedent that organizations can manage is the quality of the feedback environment provided by supervisors. Performance feedback is not limited to the delivery of performance information but encompasses a relational environment involving source credibility, the quality and manner of feedback delivery, supervisor availability, and encouragement to seek feedback (Steelman et al., 2004). Quality feedback guides behavior, reduces uncertainty, and strengthens perceptions of support (Hattie & Timperley, 2007), and at the organizational level is associated with citizenship behavior and reduced withdrawal behavior (Lonsdale, 2016). Nevertheless, the psychological pathway linking feedback to the decision to stay has not been fully clarified.

The mechanism most consistently proposed in the literature is work engagement, a positive motivational-affective state characterized by vigor, dedication, and absorption (Schaufeli et al., 2002, 2006). Within the Job Demands-Resources framework, feedback functions as a job resource that fosters engagement (Bakker & Demerouti, 2007), and engagement serves as a link between human resource practices and organizational advantage (Albrecht et al., 2015). A number of studies have shown an engagement-mediation pattern: in the relationship between leadership style, coaching, and feedback with turnover intention (Lee et al., 2018), supervisor support (Kaur & Randhawa, 2021; Raditriono & Hendarsjah, 2024), job security and job embeddedness (Joubert et al., 2023), workplace friendship and trust (Ariyabuddhiphongs & Boonsanong, 2019), and transformational leadership (Ntseke et al., 2022). The negative relationship between engagement and turnover intention has also been documented in high-demand professions (Xue et al., 2024), and is reinforced by a Job Demands-Resources-based meta-analysis showing that work engagement is negatively related to turnover intention, although with effect sizes generally weaker than those for satisfaction and commitment (Mazzetti et al., 2021).

These findings can be situated within Social Exchange Theory (Cook et al., 2013), a framework that continues to be examined and systematized to this day (Ahmad et al., 2023). According to the norm of reciprocity, when an organization or supervisor invests relationally, employees tend to reciprocate with attitudes and behaviors that benefit the organization (Settoon et al., 1996). Quality feedback can be read as a signal that the organization values and attends to employee development (Suazo et al., 2009), and the perception that the organization values and cares about employee well-being—the core of organizational support—is an indicator of social exchange that is consistently related to work attitudes (Kurtessis et al., 2017). This perception fosters higher engagement and, through that engagement, reduces the tendency to withdraw from the exchange relationship. Conversely, detrimental exchanges, such as abusive supervision, erode engagement and increase turnover intention (Oliveira & Najnudel, 2023).

Amid this theoretical support, gaps remain unfilled. First, most evidence for engagement mediation has been gathered from cross-age adult samples, specific sectors, or non-Indonesian contexts, so its applicability to Indonesian Gen-Z workers remains uncertain. Second, the antecedents tested are generally broad resource constructs, and rarely a

multidimensional feedback environment as operationalized by the Feedback Environment Scale. Third, latent mediation testing commonly relies on a frequentist framework that requires large samples, whereas a Gen-Z population with a narrow tenure criterion is difficult to recruit in large numbers. The Bayesian Structural Equation Modeling (BSEM) approach is suited to this context because it derives inference from the full posterior distribution and, through weakly informative priors, stabilizes estimation in small samples (Depaoli, 2021). Systematic reviews confirm that in small samples, default diffuse priors can produce biased estimates, so weakly informative priors are in fact more recommended (Smid et al., 2019), and Bayesian mediation analysis is specifically considered relevant for small-sample research (Miočević et al., 2017). The roots of the Bayesian approach to factor analysis were formulated long ago (Lee, 1981) and have now matured into a robust framework for latent modeling (Kaplan, 2024), with the interpretive advantage of credible intervals and posterior probabilities that can be interpreted directly (Faulkenberry et al., 2020).

Based on the foregoing, this study aims to examine whether work engagement mediates the relationship between performance feedback and turnover intention among Indonesian Gen-Z workers, using BSEM suited to small samples. This study is exploratory-confirmatory in nature: rather than formulating directional hypotheses a priori, the mediation model is estimated and the posterior distribution is allowed to reveal whether such mediation exists, and its direction and strength. The narrative is thus built to follow the actual analytic results, including transparent reporting of model fit limitations.

METHOD

Research Design

This study used a quantitative cross-sectional design with primary data collected at a single point in time (Creswell & Creswell, 2018), analyzing a latent mediation model via Bayesian Structural Equation Modeling. Because measurement was conducted simultaneously, this study tests the consistency of the data pattern with the mediation structure examined, rather than establishing causal claims in a strict sense.

Participants

The study population was Gen-Z workers in Indonesia. Participants were selected through purposive sampling based on the researcher's judgment (Sugiyono, 2019), with inclusion criteria: Indonesian citizenship, aged 18 to 28 years, having worked at the same company for a minimum of 6 months and no more than 2 years, and having received performance feedback from a supervisor. The initial plan targeted a minimum of 153 respondents based on a power calculation using G*Power ($\alpha = 0.05$; power = 0.80; effect size = 0.2). However, the narrow tenure criterion made large-scale recruitment difficult to achieve. Of the 102 respondents who completed the questionnaire in full, screening against the tenure criterion left 68 eligible participants. This sample size limitation is what underpinned the choice of the Bayesian framework, whose inferential validity does not depend on large-sample assumptions (Depaoli, 2021).

Instruments

Performance feedback was measured using the Feedback Environment Scale (FES) Supervisory Factor from Steelman et al. (2004), consisting of 32 items across seven facets: source credibility, feedback quality, feedback delivery, favorable feedback, unfavorable feedback, source availability, and feedback-seeking encouragement. Each item was rated on a seven-point Likert scale (1 = strongly disagree to 7 = strongly agree) and was reported to have

high internal consistency in its original development (overall $\alpha = .96$). Nine negatively worded FES items, such as statements expressing distrust of supervisor feedback, were transformed through reverse scoring on the 1-to-7 scale so that the direction of all items was consistent with the construct being measured.

Work engagement was measured with the nine-item Utrecht Work Engagement Scale (UWES-9) from Schaufeli et al. (2006), representing three dimensions—vigor, dedication, and absorption—each with three items, rated on a six-point response scale (1 to 6). The choice of the nine-item version is consistent with factorial validity reviews showing that the UWES-9 has psychometric properties equal to or better than the UWES-17 and high total reliability, although its three-factor structure is not always consistent across contexts (Kulikowski, 2017).

Turnover intention was measured with the Turnover Intention Scale (TIS) from Michaels and Spector (1982), consisting of three items with six response options (1 = strongly disagree to 6 = strongly agree).

Procedure and Research Ethics

Data collection was conducted online via Google Forms. Before completing the questionnaire, each participant read an explanatory sheet and provided informed consent for voluntary participation; data confidentiality and anonymity were guaranteed, and participants had the right to withdraw at any time without consequence. After data collection, cross-verification was performed to ensure that only responses meeting the criteria were analyzed. This study followed applicable research ethics principles (Hansen et al., 2023) and received ethical approval from the Research Ethics Committee of the Faculty of Psychology, Universitas Indonesia, with approval number 190/FPsi.Komite Etik/PDP.04.00/2025.

Data Analysis

Parceling. Because the ratio of parameters to sample size was unfavorable, indicators were formed through parceling. Performance feedback was represented by seven parcels consisting of mean item scores per FES facet; work engagement by three parcels corresponding to the UWES dimensions (vigor, dedication, absorption); while turnover intention remained measured by its three original items. Parceling stabilized estimation and improved the indicator-to-sample ratio, although its consequence—the possibility of masking item-level misfit—is openly acknowledged (Depaoli, 2021).

Model specification. The latent mediation model was constructed using the blavaan package (Merkle & Rosseel, 2018; Merkle et al., 2021), which runs Bayesian estimation on top of Stan and is rooted in the original formulation of Bayesian factor analysis (Lee, 1981). The conceptual model structure is as follows:

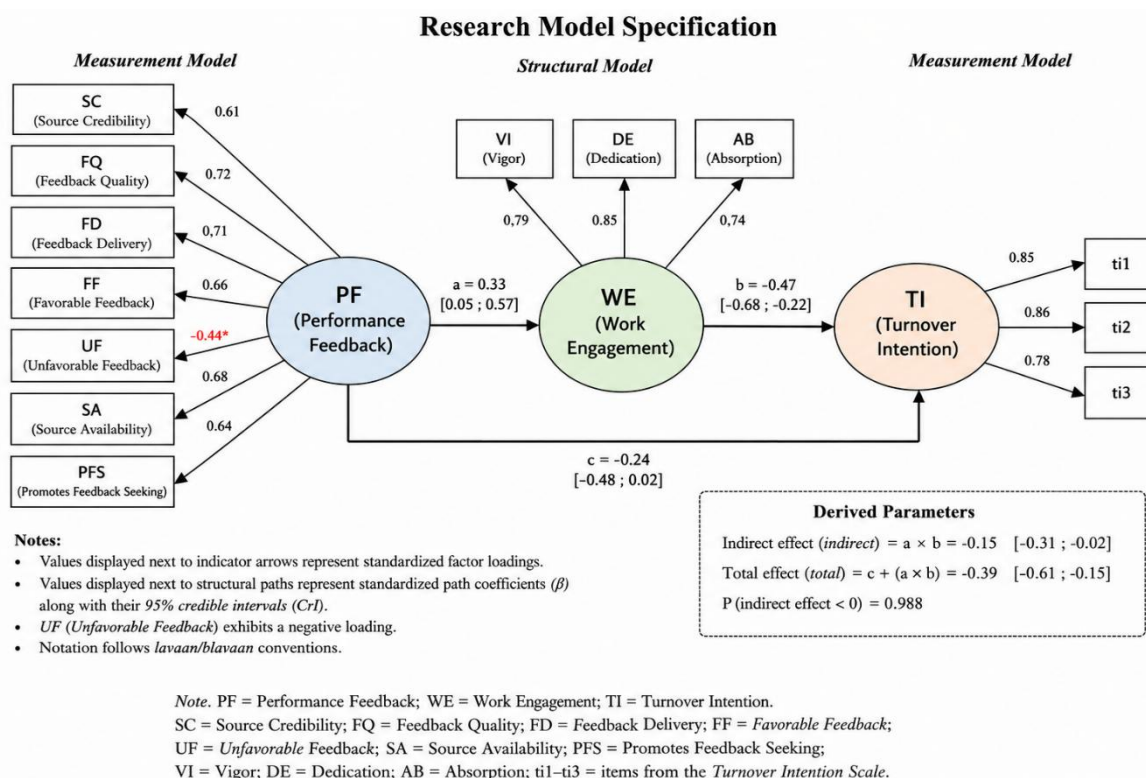


Figure 1. Research Model Specification

Estimation. Estimation used blavaan's default weakly informative priors, namely regression coefficients following Normal(0, 10) and variance parameters following Gamma(1, 0.5), with three Markov chain Monte Carlo (MCMC) chains, 3,000 burn-in iterations, and 10,000 post-burn-in iterations per chain (seed 1234). The choice of full-posterior-distribution Bayesian estimation is consistent with recommendations for small samples and complex latent models (Depaoli, 2021; Kaplan, 2024). The use of weakly informative priors, rather than diffuse priors, is likewise consistent with recommendations for small-sample contexts (Smid et al., 2019).

Convergence diagnostics and model evaluation. Convergence was assessed via the potential scale reduction factor (PSRF) with a threshold of < 1.01 (Gelman & Rubin, 1992), effective sample size (ESS), trace plot inspection, and the Geweke and Heidelberger-Welch stationarity tests. Model fit was evaluated via the posterior predictive p-value (PPP) for exact fit, and Bayesian RMSEA (BRMSEA) and BGammaHat for approximate fit (Hoofs et al., 2018); the residual covariance matrix was inspected to identify local misfit.

Mediation inference and prior sensitivity. The indirect effect ($a \times b$) was examined through its posterior distribution, reported with a 95% credible interval (percentile and highest density interval, HDI) and the probability of direction, namely $P(\text{effect} < 0)$. The credible interval is interpreted directly as a 95% probability that the parameter value lies within that range (Kaplan, 2014), differing from the frequentist confidence interval and not requiring a binary reject/fail-to-reject decision on the null hypothesis (Faulkenberry et al., 2020). Prior sensitivity analysis compared the default regression-coefficient prior Normal(0, 10) against the stricter prior Normal(0, 1), as well as the alternative prior inverse-gamma(2, 0.5) for residual variance. All analyses were conducted in R version 4.6.0 using the blavaan, lavaan, and coda packages.

RESULTS AND DISCUSSION

Sample Description and Convergence Diagnostics

Analysis was conducted on 68 Gen-Z workers who met all tenure criteria (6 to 24 months), the result of screening from 102 respondents. All parameters converged well: maximum PSRF of 1.003 (below the 1.01 threshold), and a minimum effective sample size of 1,073. Trace plot inspection showed stable chain mixing with no systematic trend (Figure 1), while the Geweke and Heidelberger-Welch stationarity tests passed for all parameters. A total of 32 divergent transitions were recorded (approximately 0.1% of total iterations), a very small proportion that did not affect inference.

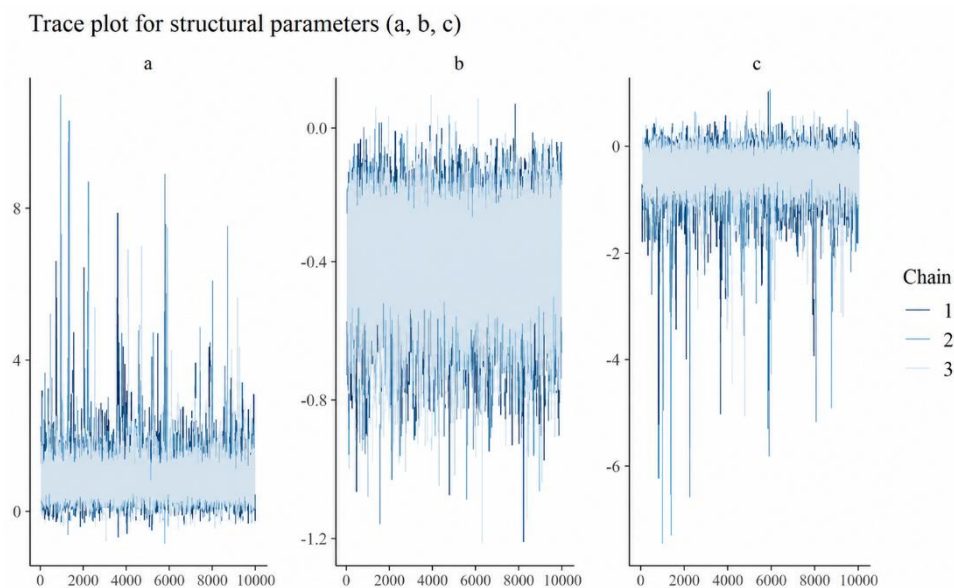


Figure 2. Trace plot of key parameters from the three MCMC chains. Good mixing and overlap across chains indicate convergence.

Model Fit

Exact fit was rejected, with a posterior predictive p-value (PPP) of 0.008. However, approximate fit indices were moderate: BRMSEA = 0.107 (90% HPD [0.091; 0.123]) and BGammaHat = 0.895 (Hoofs et al., 2018). Inspection of the residual covariance showed the largest off-diagonal residual to be 0.449. As a cross-paradigm comparison, maximum likelihood (ML) estimation of the same model produced indices pointing in the same direction (Table 1).

Table 1. Comparison of model fit indices: Bayesian and maximum likelihood (ML) estimation.

Indeks	ML	Bayesian
Chi-square (χ^2)	109,507	—
df	62	—
p-value	< ,001	—
RMSEA / BRMSEA	0,106	0,107
CFI	0,882	—
TLI	0,852	—
PPP	—	0,008

Note. The “—” sign indicates that the index is not defined within the corresponding estimation framework. BRMSEA = Bayesian RMSEA; PPP = posterior predictive p-value.

Measurement Model

In the performance feedback measurement model, six of the seven facet parcels loaded positively and strongly onto the latent factor. The exception was the unfavorable feedback facet

(UF_mean), which loaded negatively at -0.44, a pattern indicating that this facet operates in the opposite direction from the other facets. The loadings of the work engagement parcels and turnover intention items were all signed consistently with their constructs.

Structural Model

Estimates of the structural paths are presented in Table 2 and visualized in Figure 2. Performance feedback positively and credibly predicted work engagement (standardized path $a = 0.33$; 95% credible interval [0.05; 0.57]). Work engagement negatively and credibly predicted turnover intention ($b = -0.47$; [-0.68; -0.22]). The direct path from performance feedback to turnover intention was not credible, as its interval included zero ($c = -0.24$; [-0.48; 0.02]). The variance explained by the model was $R^2 = 0.14$ for work engagement and $R^2 = 0.39$ for turnover intention.

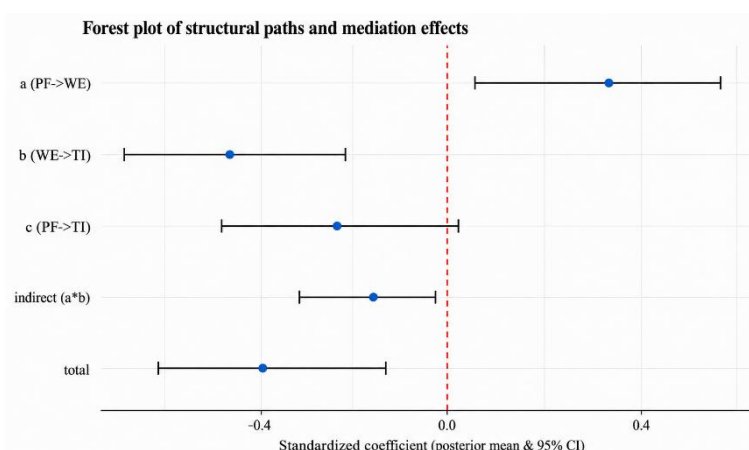


Figure 3. Plot of (standardized) structural path coefficients with 95% credible intervals. Paths whose intervals cross the zero line are not considered credible.

Table 2. Estimates of structural paths and mediation effects on standardized and unstandardized scales.

Path	b* (terstd.)	95% CI*	B (takstd.)	SD	95% CI	P(<0)
a	0,	[0,0	0,9	0,6	[0,11	0,0
(PF→WE)	33	5; 0,57]	25	75	0; 2,414]	11
b	-	[-	-	0,1	[-	1,0
(WE→TI)	0,47	0,68; -0,22]	0,391	43	0,707; -0,149]	00
c	-	[-	-	0,4	[-	0,9
(PF→TI)	0,24	0,48; 0,02]	0,552	76	1,583; 0,032]	68
indire	-	[-	-	0,2	[-	0,9
ct (a×b)	0,15	0,31; -0,02]	0,350	86	0,996; -0,037]	88
total	-	[-	-	0,6	[-	0,9
(c+a×b)	0,39	0,61; -0,14]	0,902	39	2,344; -0,232]	98

Note. b* = standardized coefficient; B = unstandardized coefficient (original scale); P(<0) = posterior probability that the parameter is negative (invariant to rescaling). 95% HDI for the standardized indirect effect = [-0.30; -0.02].

Mediation Effect

The standardized indirect effect was -0.15, with a 95% credible interval of [-0.31; -0.02] and an HDI of [-0.30; -0.02]; neither contains zero. The posterior probability that this effect is negative reached $P(\text{effect} < 0) = 0.988$. The posterior distribution of the indirect effect is shown in Figure 3, with probability mass concentrated in the negative region. The total effect was also negative and credible (-0.39; [-0.61; -0.14]). Because the indirect effect's interval excludes zero while the direct path's interval (c) includes zero, the pattern of results supports full mediation by work engagement.

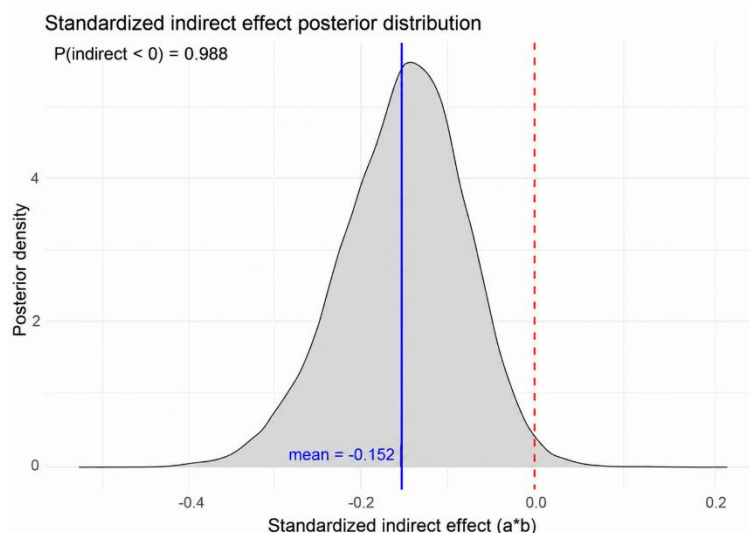


Figure 4. Posterior density of the indirect effect ($a \times b$). Probability mass concentrated below zero indicates a negative effect direction.

Prior Sensitivity Analysis

Table 3 shows that under the default prior Normal(0, 10), the stricter prior Normal(0, 1), and the alternative prior inverse-gamma(2, 0.5) for residual variance, the indirect effect remained negative and its interval consistently excluded zero. This stability indicates that the mediation inference is robust to prior variation (Depaoli, 2021).

Table 3. Sensitivity of estimates (original scale) to prior specification.

Prior	<i>a</i>	<i>b</i>	<i>c</i>	<i>indirect</i>
Normal(0; 10) [default]	0,925 [0,110; 2,414]	-0,391 [-0,707; -0,149]	-0,552 [-1,583; 0,032]	-0,350 [-0,996; -0,037]
Normal(0; 1)	0,711 [0,061; 1,476]	-0,392 [-0,711; -0,155]	-0,444 [-1,049; 0,039]	-0,271 [-0,661; -0,022]
Inverse-gamma(2; 0,5)	0,964 [0,079; 3,180]	-0,419 [-0,750; -0,166]	-0,606 [-2,039; 0,023]	-0,389 [-1,295; -0,031]

Note. Each cell shows the posterior mean and 95% credible interval. The indirect effect is negative and credible across all three specifications.

DISCUSSION

This study aimed to examine whether work engagement mediates the relationship between performance feedback and turnover intention among Indonesian Gen-Z workers. The results show that work engagement fully mediates this effect: a quality feedback environment is associated with higher work engagement, work engagement is associated with lower turnover intention, while the direct effect of feedback on turnover intention is not credible. Because the posterior distribution of the indirect effect excludes zero, with approximately 98.8% posterior confidence that the effect is negative, the mediation mechanism examined receives clear empirical support in this sample.

This pattern is coherent with the logic of Social Exchange Theory (Cook et al., 2013; Ahmad et al., 2023). Credible feedback delivered well can be read as a relational investment signaling that the organization values and attends to employee development (Suazo et al., 2009), and according to the norm of reciprocity, this signal is reciprocated by employees with higher engagement (Settoon et al., 1996). It is this engagement that reduces the tendency to withdraw from the exchange relationship. This finding extends the evidence that engagement mediates the effect of relational resources on turnover intention, previously documented for leadership and feedback (Lee et al., 2018), supervisor support (Kaur & Randhawa, 2021; Raditrono & Hendarsjah, 2024), job security and job embeddedness (Joubert et al., 2023),

workplace friendship and trust (Ariyabuddhiphongs & Boonsanong, 2019), and transformational leadership (Ntseke et al., 2022). This study adds a context not yet widely tested, namely Indonesian Gen-Z workers with a multidimensional feedback environment antecedent. The directional consistency with findings in high-demand professions (Xue et al., 2024) and with research on the detrimental side of exchange (Oliveira & Najnudel, 2023) reinforces the overall coherence.

The negative loading of the unfavorable feedback facet (UF_mean) deserves careful interpretation. This pattern suggests that perceptions of unfavorable feedback operate in the opposite direction from the positive aspects of the feedback environment, such that when forced to load in a single direction on one factor, it loads negatively. Nevertheless, this facet remains an important part of the feedback environment construct as formulated by Steelman et al. (2004), and the power of feedback indeed depends on how and in what sense it is received, not merely on its presence (Hattie & Timperley, 2007). Similar caution is recommended in the engagement measurement literature, which shows that factor structure can be inconsistent across contexts, such that combining dimensions into a single score needs to be weighed carefully (Kulikowski, 2017). For Gen-Z workers, frequently receiving corrective feedback does not appear to be automatically experienced as developmental support, but may instead erode perceptions of appreciation, reversing the loading direction. This finding implies the need for caution in combining favorable and unfavorable dimensions into a single score.

The magnitude of variance explained requires balanced interpretation. The model explains only 14% of the variance in work engagement, indicating that engagement is primarily shaped by factors outside the feedback environment. This is consistent with the Job Demands-Resources framework, which views engagement as the result of various job resources and demands (Bakker & Demerouti, 2007), and with longitudinal meta-analytic reviews identifying a range of job resources as drivers of engagement (Lesener et al., 2020), such that feedback is one of several determinants rather than the sole determinant. In contrast, the model explains 39% of the variance in turnover intention, a substantial proportion consistent with engagement's position as a strong negative predictor of turnover intention (Albrecht et al., 2015; Lonsdale, 2016; Mazzetti et al., 2021). This contrast indicates that the main practical value of the feedback environment lies in its indirect pathway, namely through engagement.

Practically, this finding suggests one lever that organizations can manage to retain Gen-Z talent: the quality of the supervisory feedback environment. Because the effect of feedback on turnover intention operates through work engagement, training supervisors to deliver feedback that is credible, high-quality, and delivered in a respectful manner has the potential to foster engagement and, through that engagement, suppress turnover intention. Given Gen-Z's pragmatic character and their value placed on recognition (Dolot, 2018; Witte, 2022), particular attention should be given to how corrective feedback is delivered so that it is experienced as support rather than alienating criticism. The fact that work engagement can be enhanced through well-designed interventions strengthens the feasibility of this recommendation (Knight et al., 2019).

Methodologically, this study illustrates the value of the Bayesian approach in small-sample contexts. With $n = 68$, Bayesian estimation with weakly informative priors stabilized inference without relying on large-sample theory for validity (Depaoli, 2021; Kaplan, 2024), an advantage consistent with reviews of Bayesian estimation in small samples (Smid et al., 2019) and with specific studies on small-sample Bayesian mediation analysis (Miočević et al., 2017). The Bayesian output also enables straightforward probabilistic statements, such as a posterior probability of 0.988 that the mediation effect is negative, and credible intervals that can be interpreted directly as ranges containing the parameter with a given probability (Kaplan, 2014; Faulkenberry et al., 2020). The robustness of the mediation inference to prior variation adds confidence to the conclusion.

A number of limitations must be stated openly. First, the small sample size ($n = 68$) limits estimation precision. Second, the cross-sectional design does not permit causal claims; the direction of effects rests on theory rather than on manipulation or temporal ordering. Third, exact fit was rejected ($PPP = 0.008$), so the model has not fully captured the structure of the data, and the structural coefficients must be read in light of this misfit. Fourth, the use of parceling stabilized estimation but may mask issues at the item level, including for the unfavorable feedback facet. Fifth, generalization is limited to Indonesian Gen-Z workers with 6 to 24 months of tenure. In addition, because the characterization of mediation as full rests on the lack of credibility of the direct path in this sample, and the status of the direct path may change with a larger sample size, this characterization should be regarded as a provisional finding awaiting replication. Future research directions include longitudinal designs to test causality, larger and more diverse samples, testing of alternative models (e.g., without the unfavorable feedback facet or treating it separately), and predictive validation against actual turnover rather than mere intention.

CONCLUSION

This study concludes that, among the Indonesian Gen-Z workers studied, supervisory performance feedback is associated with lower turnover intention through increased work engagement, with a pattern supporting full mediation and consistent with Social Exchange Theory. The negative and credible indirect effect, with a posterior probability of 0.988, receives robust empirical support across variations in the Bayesian prior. The rejection of exact fit and the sample limitations are transparently disclosed as part of scientific honesty. Practically, organizations are advised to build a constructive feedback environment, with particular attention to how corrective feedback is delivered, as a strategy to foster engagement and retain Gen-Z talent.

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