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Work Engagement as a Mediator Linking Person-Job Fit, Perceived Training Benefit, and Self-Efficacy to Employee Resilience Among Heavy Equipment Mechanics

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ABSTRACT

The coal mining industry is a high-risk work sector that demands high psychological resilience from its workers, including heavy equipment mechanics. Resilience is the key ability to survive, adapt, and remain productive under extreme work pressure. This study aims to examine the influence of Person-Job Fit (PJF), Perceived Training Benefit (BEN), and Self-Efficacy (SE) on Resilience (RES), with Work Engagement (WE) as a mediating variable. This study uses a quantitative approach with convenience sampling techniques on 301 heavy equipment mechanics working in the coal mining industry. Data were collected through a questionnaire survey and analyzed using the Partial Least Squares–Structural Equation Modeling (PLS-SEM) method. The results of the study show that PJF and SE have a positive and significant direct influence on RES. In contrast, BEN does not have a direct effect on RES, but shows significant influence indirectly through WE mediation. All three independent variables—PJF, BEN, and SE—also had a significant effect on WE, which in turn increased RES. These findings confirm that WE plays an important mediating role in strengthening the relationship between individual resources and job resilience. The results provide actionable insights for mining organizations to design targeted interventions that enhance work engagement as a pathway to building psychological resilience in demanding work environments. The practical implications of these results encourage organizations to improve job suitability, training effectiveness, and employee self-confidence as strategies for building psychological resilience in challenging work environments.

KEYWORDS *Resilience, Person-Job Fit, Work Engagement, Self-Efficacy, Perceived Training Benefit*

INTRODUCTION

The mining industry, especially the coal sector, is one of the sectors with a high level of occupational risk and extreme environments (Neklonskyi et al., 2022; Pankov & Kuleshova, 2020). Workers such as heavy equipment mechanics face physical stress, time demands, extreme weather, and a great risk of accidents. In this context, the ability to remain resilient and adapt psychologically becomes very important, making resilience the main capacity that needs to be developed. Resilience in the work environment is defined as an individual's capacity to recover from and survive work pressure, as well as to thrive amid difficult experiences (Jackson et al., 2021).

Individual factors such as *person–job fit* (PJF), perceived training benefit (BEN), and self-efficacy (SE) have been identified as important determinants that affect resilience levels. Individuals who feel well suited to their jobs tend to show a higher capacity to adapt to work stress (Wongsuwan & Na-Nan, 2022). Similarly, perceptions of training effectiveness can increase confidence and readiness in facing job challenges (Alrowwad et al., 2021). In addition, self-efficacy—or individual confidence in one's own abilities—has been shown to influence coping strategies in dealing with work pressure (Shin et al., 2020).

However, various contemporary studies also emphasize that the influence of these three factors on resilience is not direct but is mediated by other psychological variables such as work

engagement (WE). Based on the Job Demands–Resources (JD-R) model, work engagement reflects a positive mental state that makes employees more energetic, dedicated, and absorbed in their work (Bakker et al., 2023). WE has proven to be a motivational pathway that amplifies the positive effects of individual and organizational resources on various outcomes, including resilience (Kim & Lee, 2021).

Despite the theoretical importance of these relationships, empirical research examining the simultaneous effects of PJF, BEN, and SE on resilience through work engagement remains limited, particularly in high-risk industrial contexts such as coal mining. Most existing studies have focused on service or manufacturing sectors (Salanova et al., 2011; Chan et al., 2017), leaving a significant gap in understanding how these psychological mechanisms operate among technical workers in extreme environments. For instance, van Woerkom et al. (2024) investigated person–job fit and thriving in general organizational contexts but did not examine resilience outcomes or mediating mechanisms specific to hazardous industries. Similarly, Zheng et al. (2022) explored training impacts on resilience through psychological capital, yet their study did not include work engagement as a mediator or focus on blue-collar technical workers. Furthermore, Wongsuwan and Na-Nan (2022) examined person–organization fit and work adjustment but did not investigate the combined effects of multiple personal resources on resilience in mining contexts.

Therefore, there is still a lack of research that simultaneously examines the relationship between PJF, BEN, SE, and resilience (RES) with WE as a mediator in the context of technical workers in the mining industry. Work environments such as mines have unique characteristics that distinguish them from the service or manufacturing sectors, so modeling psychological relationships in this context is of great importance. The novelty of this research lies in its integrated examination of multiple personal and organizational resources (PJF, BEN, SE) and their pathways to resilience through work engagement, specifically among heavy equipment mechanics in coal mining—a population exposed to extreme physical and psychological demands yet underrepresented in organizational psychology research.

This study aims to fill this gap by empirically testing the model of relationships between psychological variables that affect resilience among heavy equipment mechanics. Using the partial least squares–structural equation modeling (PLS-SEM) approach, the study not only makes a theoretical contribution to the development of personal resources-based work models but also presents practical implications for HR management in designing training, recruitment, and retention strategies in challenging work environments.

METHOD

This study uses a quantitative approach with a survey design to examine the relationship between Person-Job Fit (PJF), Perceived Training Benefit (BEN), Self-Efficacy (SE), and Resilience (RES), as well as the mediating role of Work Engagement (WE). This strategy allows for objective measurement of the variables involved and analysis of the relationships between variables using statistical methods.

The research is observational with minimal interference and is carried out in a natural setting (non-contrrived), namely at the actual work site of heavy equipment mechanics in the mining industry. The unit of analysis is individual, and the design used is cross-sectional, where data is collected at one specific point in time.

The study population was 7,386 heavy equipment mechanics in remote coal mine locations. The technique used is Convenience Sampling, with consideration of limited access and geographical distribution. Although this technique limits generalization, it is still relevant for early exploration in the context of extreme work (Etikan et al., 2016).

This study uses the Partial Least Squares Structural Equation Modeling (PLS-SEM) method to analyze the relationship between independent, mediator, and dependent variables. The number of samples used in this study was 301 respondents, determined based on the number of indicators and the complexity of the model. Hair et al. (2021) stated that for a complex model that involves many constructs and indicators, a sample size of 150–300 respondents is adequate, especially if the indicator has a strong loading factor (≥ 0.70) and the data is free of outlier problems. This study involved a total of 33 indicators, consisting of:

a. PJF (4 indicators)
b. SE (8 indicators)
c. BEN (8 indicator)
d. WE (9 indicator)
e. RES (4 indicators)

By considering these various approaches, the number of respondents as many as 301 is considered adequate and methodologically appropriate to conduct a PLS-SEM analysis of this research model.

Data was collected through an online survey using a structured questionnaire based on Google Form. This approach was chosen for its efficiency and allows participation from remote locations. The survey was conducted anonymously to maintain the validity of the response and avoid social bias. The use of digital methods also speeds up data processing statistically.

To measure the variables in this study, a structured questionnaire was used, where each variable was measured using a series of items based on a proven scale and related literature. Responses were measured on a 5-point Likert scale with options: Strongly Agree (SS), Agree (S), Neutral (N), Disagree (TS), and Strongly Disagree (STS). This method allows for objective quantification of respondents' subjective perceptions, which facilitates statistical analysis to evaluate the relationship between Person Job-Fit, Perceived Training Benefit, Self-Efficacy, Resilience, and Work Engagement in the workplace. Here are the measurements for each variable:

Table 1: Resume the number of query items and their sources for each variable

Variabel	Number of Items	Source
PJF (Person-Job Fit)	4	Weng, Q (2010)
BEN (Perceived Training Benefit)	8	Santos & Sutart (2003)
SE (Self-Efficacy)	8	Schwarzer & Jerusalem (1995)
WE (Work Engagement)	9	Schaufeli et al. (2006)
RES (Resilience)	4	Connor & Davidson (2003)

As for the question items in the questionnaire, you can see table 2 below:

Table 2 : Variable Operationalization

Variable	Code	Measured Item
Resilience	RES1	I was able to bounce back quickly after going through a difficult time at work.

	RES2	It doesn't take me long to recover from stressful work events, such as repair failures or deadline pressures.
	RES 3	When something unexpected or bad happens at work (e.g. a sudden machine breakdown), I can still work well without any significant difficulties.
	RES 4	I was able to get through difficult times at work without significant difficulties.
Person Job-Fit	PJF1	My job as a heavy equipment mechanic is in accordance with the skills and experience I have.
	PJF2	This job meets my professional and personal needs.
	PJF3	My knowledge, skills, and technical abilities are in line with the requirements of machine mechanic work.
	PJF4	This job allows me to do the type of work I want in the field of machine mechanics.
Work Engagement	WE1	In my job as a heavy equipment mechanic, I feel full of energy.
	WE2	When I'm working on repairing or maintaining heavy equipment, I feel strong and excited.
	WE3	When I wake up in the morning, I feel motivated to work as a machine mechanic.
	WE4	I feel enthusiastic when doing my work.
	WE5	My work as a machine mechanic inspires me to continue learning and growing.
	WE6	I am proud of my work in repairing and maintaining heavy equipment.
	WE7	I feel satisfied when I work intensely and complete tasks well.
	WE8	I often feel so immersed in my work that I don't realize time is passing.
	WE9	I enjoy my work and feel carried away while working with heavy equipment.
Self-Efficacy	SE1	I am confident that I can complete my work tasks well.
	SE2	I was able to overcome the challenges I faced in my work.
	SE3	I am confident in facing difficult situations at work.
	SE4	I was able to achieve the targets set in my work.
	SE5	I'm always trying to find ways to improve my performance.
	SE6	I am confident that I can make a significant contribution to the company.
	SE7	I have the ability to solve complex problems in my work.
	SE8	I dare to take risks that are carefully calculated in my work.
Perceived Training Benefit	BEN1	The training I attended has increased my salary.
	BEN2	The training I took increased my job satisfaction.
	BEN3	After taking part in the training, I feel more motivated at work.
	BEN4	The training I took helped me do my job better.
	BEN5	The training I attended improved my promotion prospects in the company.
	BEN6	After taking part in the training, I felt valued by the company.
	BEN7	The training I attended allowed me to achieve progress in my career.
	BEN8	The training I took helped me grow personally.

RESULT AND DISCUSSION

Respondent Profile

This study involved 301 respondents who were heavy equipment mechanics from coal mining contractor service companies. Based on the employment period data, the majority of respondents are in the early to middle working age group, which reflects the diversity of experience and the level of adaptation to the extreme work environment in the mining industry.

Most of the respondents (175 people or about 58.1%) had a tenure of between 1 and 2 years. This shows that companies are recruiting a lot of new mechanics or are in the phase of regenerating technical workforce. This group is important to analyze because they are in a period of adaptation to the demands of work.

A total of 91 respondents (30.2%) had a tenure of between 2 and 5 years, reflecting a workforce group that is starting to establish itself in the job and has gone through the initial adaptation phase. They also tend to be more stable and can provide more reflective insights into training, work engagement, and psychological resilience.

Meanwhile, 14 respondents with a working period of 5 to 10 years (4.7%), and 18 people (6%) with a working period of 10 to 15 years. Respondents with a working period of more than 15 years amounted to only 4 people (1.3%), reflecting the lack of senior workforce in this position.

This distribution reflects that the majority of mechanics are at the level of early-to-middle work experience, and are an important target in training design and strategies to increase work engagement and resilience. High turnover rates or short-term project needs-based recruitment systems can also be dominant factors against this distribution.

Evaluation of the Outer Model

An evaluation of the outer model is carried out to ensure that the indicators used to measure latent constructs have adequate validity and reliability. The assessment is carried out through three main stages, namely convergent validity, internal reliability, and discriminant validity.

Convergent Validity and Construct Reliability

Based on Table 3, all constructs in the model have met the requirements of convergent validity and reliability:

Tabel 3 : Construct Validity & Reliability

Variable	Items	Factor Loading	CA(>0.7)	CR(>0,7)	AVE(>0,5)
Perceived Training Benefits	BEN1	0,790	0,948	0,951	0,733
	BEN2	0,880			
	BEN3	0,886			
	BEN4	0,880			
	BEN5	0,803			
	BEN6	0,855			
	BEN7	0,906			
	BEN8	0,841			
Person Job Fit	PJF1	0,843	0,857	0,876	0,724
	PJF2	0,770			
	PJF3	0,886			
	PJF4	0,899			
Self Efficacy	SE1	0,863	0,957	0,959	0,769
	SE2	0,910			
	SE3	0,893			
	SE4	0,889			
	SE5	0,898			
	SE6	0,880			
	SE7	0,879			

Variable	Items	Factor Loading	CA(>0.7)	CR(>0,7)	AVE(>0,5)
	SE8	0,798			
Work Engagement	WE1	0,852	0,945	0,946	0,723
	WE2	0,884			
	WE3	0,856			
	WE4	0,896			
	WE5	0,870			
	WE6	0,839			
	WE7	0,852			
	WE9	0,746			
Resilience	RES1	0,827	0,857	0,863	0,700
	RES2	0,806			
	RES3	0,838			
	RES4	0,875			

Note: Cronbach Aplha (CA), Composite Reliability (CR), Average Variance Extracted (AVE)

The loading factor of all indicators was above the threshold value of 0.708, except for one WE8 indicator which had a value of 0.559 and had been removed from the model. This is in accordance with the recommendations of Hair et al. (2021), who suggest the elimination of indicators with low loading to improve the validity of the construct.

a. The Composite Reliability (CR) of the entire construct > 0.70, indicating that the construct has good internal consistency.
b. Cronbach's Alpha (CA) also ≥ 0.70, reinforcing the evidence of reliability.
c. The Average Variance Extracted (AVE) of the entire construct > 0.50, which means that the construct can explain more than 50% of the variance of its respective indicators.

These results show that the entire construct has convergent validity and adequate construct reliability.

1. Discriminant Validity: Fornell-Larcker and HTMT

The evaluation of discriminant validity was carried out using two complementary approaches, namely the Fornell-Larcker Criterion and HTMT (Heterotrait-Monotrait Ratio).

a. Fornell-Larcker Criterion

As shown in Table 3, the value of the square root of AVE (shown in the diagonal of the table) is higher than the correlation between other constructs in the same row/column. Examples:

The root AVE of the Work Engagement (WE) construct is 0.874, higher than its correlation with other constructs such as BEN (0.884) and SE (0.874).

The same thing happened in other constructs such as RES (0.836), PJF (0.805), and BEN (0.81). This indicates that each construct can distinguish itself from other constructs within the model, thus meeting the discriminating criteria according to Fornell-Larcker.

b. HTMT Criterion

In addition, the validity of the discriminant is also confirmed through the HTMT value, where the entire value of the ratio between constructs is below the threshold of 0.90, as seen in table 4:

Tabel 4: Discriminant Validity HTMT

	IN	PJF	NOTHING	HERSELF	WE
IN					
PJF	0,810				
RES	0,719	0,805			
PJF	0,878	0,852	0,836		
WE	0,884	0,874	0,794	0,874	

Note: Resilience (RES), Person Job Fit (PJF), Self Efficacy (SE), Work Engagement (WE), Perceived Training Benefit (BEN).

These values show that there is no potential problem of discrimination between constructs (Henseler et al., 2015). Thus, the validity of discrimination can be said to be fulfilled conclusively, both from conventional (Fornell-Larcker) and modern (HTMT) approaches.

Based on the results of the outer model test, the convergent validity and reliability of the constructs have been fulfilled through the evaluation of factor loading, CR, CA, and AVE. The discriminant validity was also met, both based on the Fornell-Larcker and HTMT approaches, showing that the constructed constructs tested are able to stand conceptually and statistically separately.

Therefore, the entire measurement model is declared feasible and valid, so that it can be used to test the relationship between constructs in the structural model (inner model).

Inner Model Evaluation

The internal evaluation of the model aims to assess the strength of the relationship between latent constructs as well as the predictive ability of the research model. This assessment includes the coefficient of determination (R2), evaluation of the path coefficient, the effect of mediation, and the theoretical relevance of the constructed model.

The research model developed in this study describes the relationship between three independent variables, namely Person-Job Fit (PJF), Perceived Training Benefit (BEN), and Self Efficacy (SE) on Resilience (RES) as a dependent variable, with Work Engagement (WE) as a mediating variable. This model is based on the Job Demands–Resources (JD-R) framework which explains that individual resources contribute to work engagement, which in turn influences positive work outcomes such as psychological resilience.

In this model, it is assumed that PJF, BEN, and SE have a direct influence on RES, as well as an indirect influence through WE mediation. These relationships are visually illustrated in Figure 1.

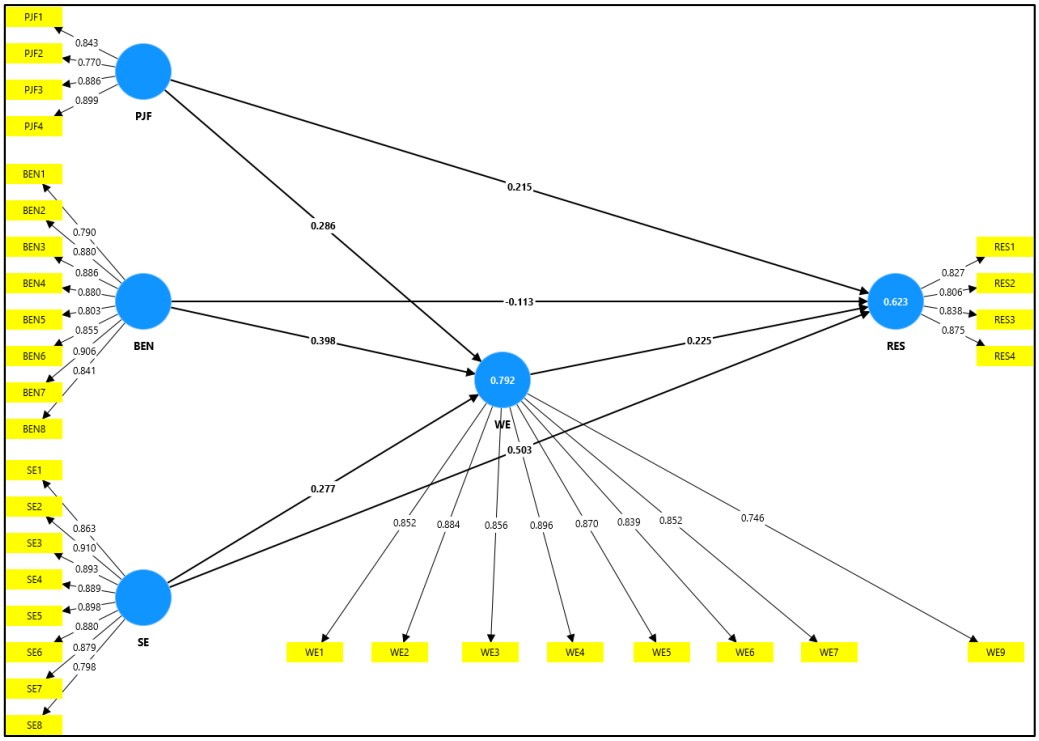

Figure 1. Proposed Research Model

1. Coefficient of Determination (R2)

The coefficient of determination (R^2) is used to show how much variability of a construct can be explained by other constructs in the model.

The R^2 value for the Work Engagement (WE) variable is 0.792, which means that 79.2% of the variation in WE can be explained by Perceived Training Benefit (BEN), Person-Job Fit (PJF), and Self-Efficacy (SE). This shows that the model has excellent predictive capabilities on work engagement. Meanwhile, the R^2 value for the Resilience construct (RES) was 0.623, indicating that 62.3% of the variance in employee resilience was explained by the other four constructs, namely PJF, SE, BEN, and WE. This indicates that the model has a fairly strong predictive ability in explaining an individual's work resilience.

2. Path Coefficient

Based on the results of the path coefficient evaluation, the direct relationship between the constructs shows several important findings. First, BEN had a positive and significant effect on WE with a coefficient value of 0.398, indicating a strong relationship. Furthermore, PJF and SE also had a fairly strong positive influence on WE, by 0.286 and 0.277, respectively, and both were significant. Meanwhile, WE had a positive and significant influence on RES (0.225), as well as the direct influence of PJF on RES (0.215) and SE on RES (0.503) which were also significant, with SE showing the strongest contribution. However, the direct effect of BEN on RES was negative and insignificant (-0.113), indicating that the benefits of training do not directly increase employee resilience without going through other mechanisms.

3. Evaluation of the Effects of Mediation

Work Engagement (WE) has proven to be an important mediating variable that bridges the influence of BEN, PJF, and SE on RES. Especially in the BEN → WE → RES pathways, the full mediation effect occurs because the direct pathway is insignificant, but the indirect

pathway through WE becomes significant. This indicates that the benefits of new training will have an impact on resilience when able to increase work engagement.

4. Intepretasi Model

Overall, this model is in line with the theoretical framework of Job Demands-Resources (JD-R) and Social Cognitive Theory. In the context of JD-R, personal resources such as self-efficacy and person-job fit play a role in strengthening work involvement and individual resilience in the face of job demands. On the other hand, the approach from Social Cognitive Theory emphasizes that confidence in self-efficacy and perception of training effectiveness (training benefits) will encourage stronger adaptive behavior. In this case, work engagement emerges as a key variable that connects individual resources (SE, PJF) and organizations (BEN) in forming resilience in a stressful work environment such as in the mining industry.

Hypothesis Testing Results

Table 5. Hypothesis Testing Results

Hipotesis	Jalur	Path Coefficient	T statistics	P values	Conclusion
H1	BEN -> RES	-0,024	0,310	0,756	Not Supported
H2	PJF -> RES	0,269	3,688	0,000	Supported
H3	SE -> RES	0,563	7,553	0,000	Supported
H4	BEN -> WE	0,387	4,572	0,000	Supported
H5	PJF -> WE	0,285	4,263	0,000	Supported
H6	SE -> WE	0,285	3,228	0,001	Supported
H7	BEN -> WE -> RES	0,091	2,145	0,032	Supported
H8	PJF -> WE -> RES	0,067	2,133	0,033	Supported
H9	SE -> WE -> RES	0,067	1,966	0,049	Supported
H10	WE > RES	0,236	2,524	0,012	Supported

The Influence of Person Job-Fit on Resilience

The results of the study show that Person-Job Fit (PJF) has a positive and significant effect on Resilience (RES). These findings support the Person-Environment Fit theory which states that compatibility between individuals and work can improve psychological well-being and resilience (van Woerkom et al., 2024). When workers feel they are a good fit for their duties and work environment, they are better able to adapt to the pressures and challenges at hand.

These findings are consistent with the research of Wongsuwan & Na-Nan (2022), which found that PJF contributes to increased work adjustment and employee resiliency, especially in demanding work environments. In the context of machine mechanics, this suitability can arise through the alignment between the technical competence of the worker and the characteristics of the work in the field.

The Effect of Perceived Training Benefits on Resiience

Contrary to the initial hypothesis, the Perceived Training Benefit (BEN) has no direct effect on RES. These results indicate that although workers view training as beneficial, it does not necessarily improve psychological resilience directly. This is in line with the study of Zheng et al. (2022), which stated that the benefits of training are more effective when mediated

by psychological factors such as work engagement. This insignificance may be due to the fact that the training provided does not always translate directly into an increase in the individual's capacity in the face of work pressure. Other factors such as organizational support, opportunities to apply new skills, and individual internal motivation are likely to play a more dominant role in shaping resilience than just the perception of the benefits of the training itself.

Contextually, training in the mining industry may still be technical and procedural, so the impact on psychological aspects such as resilience is not immediately felt. Therefore, training needs to be designed not only to improve skills, but also to foster motivation and confidence.

The Effect of Self Efficacy on Resilience

Self-Efficacy (SE) was found to have a significant direct influence on RES. These findings reinforce Bandura's (1997) theory that an individual's belief in his or her abilities plays an important role in dealing with pressure and adversity. SE enables individuals to survive and complete work challenges effectively.

Research by Shin et al. (2020) and Xanthopoulou et al. (2009) also supports that SE plays a role in forming psychological resilience. For heavy machine mechanics, confidence in their ability to handle tools, follow safety procedures, and resolve technical glitches is key to staying resilient in high-risk jobs.

The Influence of PJF, BEN, and SE on Work Engagement

The three personal resource variables—PJF, BEN, and SE—have a positive and significant effect on Work Engagement (WE). These findings support the Job Demands–Resources (JD-R) framework, which states that individual resources contribute to work motivation through work engagement (Bakker et al., 2023).

The Kim & Lee (2021) study shows that SE and PJF encourage emotional and cognitive engagement at work. Meanwhile, the perception that training provides real benefits encourages workers to be more enthusiastic in applying the knowledge gained.

The Role of Work Engagement Mediation on Resilience

The results showed that WE significantly mediated the relationship between BEN and RES. This mediation indicates that training only has an impact on psychological resilience if it succeeds in increasing the enthusiasm and involvement of individuals. This is in line with the findings of Lee & Kim (2020), which stated that engagement strengthens the impact of resources on work outcomes.

These findings suggest that the benefits of training do not directly increase resilience, but through increased employee work engagement. This is in line with the Job Demands-Resources (JD-R) Model (Bakker & Demerouti, 2007) which states that work resources such as training do not necessarily improve work outcomes or individual well-being, but must be activated through work engagement mechanisms. When employees feel that the training they receive provides real benefits, they become more engaged in their work (Salas et al., 2012). With higher work engagement, employees are more motivated to face challenges and better able to develop stronger mental resilience (Bakker & Demerouti, 2008). Studies by (Tannenbaum et al., 2010) also show that the benefits of training only have a significant impact on resilience when

individuals feel they have the opportunity to actively apply the skills they learned in their work, which increases their sense of involvement and job satisfaction

Meanwhile, WE also mediates the relationship between PJF and SE against RES, but the nature of mediation is partial, as the direct effect remains significant. This shows that work engagement is not the only pathway that connects personal resources to resilience, but it is an important reinforcer.

Contextual Reflections and Practical Implications

These findings show that job resilience is not only shaped by training or work experience, but is more influenced by role suitability, confidence, and psychological conditions at work. Therefore, organizations need to design interventions that are not only technical in nature, but also facilitate meaningful and empowering work experiences.

Training should be designed to build meaning and engagement, not just a procedural routine. Recruitment and job placement also need to consider person-job fit aspects from the beginning to reduce the risk of mental fatigue and improve work continuity in extreme environments such as mining.

Relationship of findings to respomdem profile

This study involved 301 respondents who were heavy equipment mechanics in the coal mining sector. Based on demographic data, the majority of respondents were in the range of 1-2 years of service (58.1%), followed by the group with a working period of 2-5 years (30.2%), while the rest had more than five years of experience. This profile shows that the population is dominated by new to mid-sized workers, who are still in the phase of adaptation to the pressure of work and the dynamics of the harsh mining environment.

The results of the hypothesis test showed that the Self-Efficacy (SE) variable had the strongest and most significant direct influence on Resilience (RES), with a path coefficient of 0.563 ($p = 0.000$). This finding is very relevant to the characteristics of the respondents, considering that mechanics with relatively short working hours rely heavily on self-confidence in facing daily work challenges. Their work resilience tends to be formed not from long experience, but from trust in personal ability to complete tasks.

In contrast, the Perceived Training Benefit (BEN) did not show a significant direct effect on Resilience (H1; $\beta = -0.024$; $p = 0.756$). This can be explained by the fact that new workers are less likely to feel the long-term impact of training, or that training has not been internalized as part of their adaptive competencies. However, the indirect pathway through Work Engagement (WE) proved to be significant (H7; $\beta = 0.091$; $p = 0.032$), indicating that training will contribute to resilience if it succeeds in increasing work engagement first. In other words, engagement is an important psychological mechanism that mediates between the perception of training benefits and work resilience, especially in groups with unestablished work experience.

In addition, Person-Job Fit (PJF) has a direct effect on Resilience ($\beta = 0.269$; $p = 0.000$) and Work Engagement ($\beta = 0.285$; $p = 0.000$). This shows that the fit between the individual and his or her work is crucial in increasing resilience and engagement. This is especially relevant to the group of workers with < 5 years of experience, who tend to be looking for a match point between self-competence and job demands. When this perception of conformity increases, engagement and resilience also increase simultaneously.

Meanwhile, Work Engagement itself has a significant contribution to Resilience (H10; β = 0.236; p = 0.012), as well as being a significant mediator in the relationship between SE, PJF, and BEN to RES (H7–H9 all supported). This means that work involvement is a crucial connecting variable, which bridges individual resources (self-efficacy and person-job fit) and organization (perceived training benefit) in shaping work resilience.

This overall model supports theoretical approaches such as Job Demands-Resources (JD-R) and Social Cognitive Theory, where the success of workers' adaptation to high workloads is strongly influenced by psychological and environmental resources. For a relatively new and long-term group of respondents, the role of internal resources such as self-efficacy and engagement is very dominant in forming resilience. Meanwhile, organizational interventions such as training will have an impact if they are able to trigger meaningful work involvement.

CONCLUSION

This study aims to examine the influence of Person-Job Fit (PJF), Perceived Training Benefit (BEN), and Self-Efficacy (SE) on Resilience (RES), with Work Engagement (WE) as a mediator, in the context of heavy equipment mechanics in the mining industry. The results of the analysis showed that PJF and SE had a direct and significant effect on RES, while BEN did not have a direct effect but had an indirect effect through WE mediation. The three independent variables were also proven to have a positive effect on WE, which further played an important role as a mediator in strengthening employee psychological resilience. Theoretically, these findings expand the understanding of the Job Demands–Resources (JD-R) model by emphasizing the role of personal resources such as PJF, BEN, and SE in shaping resilience through the motivational pathway, namely WE. The study also provides empirical evidence in the context of technical and high-risk work, which is still rarely discussed in the JD-R literature. From a practical perspective, the results of this study provide implications for the management of mining organizations to not only focus on technical training, but also pay attention to work compatibility and strengthening employee self-efficacy. Training design should be oriented towards increasing work engagement so that its benefits can have an impact on psychological resilience. However, this study has several limitations, including the use of convenience sampling methods that limit the generalization of results, as well as quantitative approaches that have not captured the dynamics of workers' subjective experiences. Further research is recommended to use mixed-methods or longitudinal methods to see changes in resilience over a period of time, as well as to reach out to other sectors of work to strengthen the external validity of the model.

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