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Enhancing Employee Performance through Strengthened Knowledge Management, Training, and Work Engagement: Evidence from the Financial and Development Supervisory Agency

Ade Nasir[1*]
Master of Management Program
Postgraduate School, Universitas Pakuan, Bogor, Indonesia
E-mail: dezir78@gmail.com

Nancy Yusnita[2]
Master of Management Program
Postgraduate School, Universitas Pakuan, Bogor, Indonesia
E-mail: nancyyusnita@yahoo.co.id

Herdiyana[3]
Master of Management Program
Postgraduate School, Universitas Pakuan, Bogor, Indonesia
E-mail: herdiyana@unpak.ac.id

ABSTRACT

This study explores the role of knowledge management and training in improving employee performance by considering work engagement as an intervening mechanism within a public sector supervisory institution. The research adopts a quantitative approach and involves civil servants working at a regional financial and development supervisory agency in Indonesia. Data were obtained through standardized and reliable measurement instruments, and the relationships among variables were analyzed using a causal modeling technique. The findings indicate that both knowledge management and training play an important role in strengthening work engagement and enhancing employee performance. These results suggest that employee performance is shaped not only by the development of knowledge and skills but also by the level of psychological involvement and enthusiasm employees bring to their work. From a practical perspective, the study highlights the importance for public sector organizations to develop integrated knowledge management practices and deliver effective training programs while simultaneously fostering employee engagement. The originality of this study lies in confirming the mediating role of work engagement, demonstrating the complementary influence of knowledge management and training, and providing empirical evidence.

Keywords: Knowledge Management; Training; Work Engagement; Employee Performance

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 *Corresponding Author: dezir78@gmail.com

INTRODUCTION

Employee performance is widely recognized as a critical determinant of organizational effectiveness and sustainability (Robbins & Judge, 2017; Armstrong, 2020). In public sector institutions, including educational organizations, performance reflects not only productivity but also service quality, compliance, and accountability (Mangkunegara, 2017; Dessler, 2020). Within vocational high schools, administrative staff play a strategic role in managing academic records, financial documentation, student services, and institutional reporting systems. However, empirical evidence suggests that performance challenges in public institutions often emerge in the form of procedural delays, inefficiencies, and inconsistent service standards (Colquitt *et al.*, 2019). Such performance issues may weaken institutional credibility and operational effectiveness. In vocational education settings, where schools must respond to both academic and industry-oriented demands, administrative performance becomes increasingly crucial. Therefore, identifying factors that influence employee performance is essential to strengthen institutional competitiveness and service excellence.

Previous studies demonstrate that compensation and intrinsic motivation are significant predictors of employee performance, although empirical findings vary across institutional contexts (Milkovich *et al.*, 2018; Gagné *et al.*, 2019). Compensation has been shown to enhance employee performance by strengthening perceptions of fairness and reinforcing desired behaviors (Gerhart & Fang, 2015; Armstrong, 2020). Meanwhile, intrinsic motivation contributes to higher engagement, persistence, and proactive behavior, which ultimately improve task accomplishment (Ryan & Deci, 2017; Gagné *et al.*, 2019). Work discipline, on the other hand, is often conceptualized as a behavioral mechanism that ensures organizational rules and standards are consistently implemented (Mangkunegara, 2017; Efawati, 2020). Theoretically, compensation may influence discipline by reinforcing compliance, whereas intrinsic motivation may foster self-regulated discipline through internal commitment (Robbins & Judge, 2017). These theoretical perspectives imply that work discipline could mediate the relationship between compensation, intrinsic motivation, and performance. However, empirical results regarding this mediation mechanism remain inconsistent, particularly within public educational institutions.

Vocational high schools were selected as the research context due to their dual responsibility in delivering academic services and supporting workforce-oriented education systems (Tilaar, 2018). Administrative staff in vocational schools handle complex operational tasks that require procedural accuracy, regulatory compliance, and service responsiveness. Unlike private organizations, public vocational institutions operate under standardized compensation systems and bureaucratic administrative regulations, which may influence employee behavioral dynamics (Dessler, 2020). Furthermore, most previous studies focus on teachers or managerial personnel, while limited empirical research examines administrative staff performance within vocational educational settings. This contextual gap justifies the selection of vocational high school administrative employees as a relevant population to explore structural and motivational determinants of performance.

Despite extensive research on compensation, intrinsic motivation, and performance, several gaps remain. First, prior findings regarding the effect of compensation on performance are inconsistent, particularly in public sector contexts where compensation structures are fixed and less performance-based (Gerhart & Fang, 2015). Second, although intrinsic motivation is widely recognized as a key performance driver, limited studies examine its interaction with formal behavioral mechanisms such as work discipline (Ryan & Deci, 2017). Third, while work discipline has been treated as

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an independent predictor of performance, its mediating role between compensation, intrinsic motivation, and performance has not been sufficiently examined in vocational school contexts. Fourth, empirical investigations focusing specifically on administrative staff in vocational high schools remain scarce. These gaps indicate the necessity of developing a more integrative empirical model that simultaneously examines compensation, intrinsic motivation, work discipline, and performance within a vocational educational framework.

In summary, inconsistencies in previous empirical findings and limited contextual research on vocational high school administrative staff reveal a significant gap concerning the mediating role of work discipline in the relationship between compensation, intrinsic motivation, and performance. The novelty of this study lies in testing an integrated mediation model within a vocational public education context characterized by standardized compensation systems and bureaucratic discipline norms. Theoretically, this study contributes to clarifying the behavioral mechanism underlying employee performance formation. Practically, the findings provide strategic insights for school management in designing compensation policies and motivational strategies to enhance administrative staff performance. Therefore, this study aims to analyze: (1) the effect of compensation on employee performance, (2) the effect of intrinsic motivation on employee performance, (3) the effect of compensation and intrinsic motivation on work discipline, (4) the effect of work discipline on performance, and (5) the mediating role of work discipline in the relationship between compensation, intrinsic motivation, and employee performance among vocational high school administrative staff.

LITERATURE REVIEW

Knowledge management is an organizational capability to systematically create, store, share, and apply knowledge to enhance decision-making and effectiveness. In public sector organizations, it supports employee performance by facilitating access to relevant information, reducing redundancy, and aiding problem-solving in complex, regulated environments (Sahibzada *et al.*, 2020; Deng *et al.*, 2023; Xu *et al.*, 2024). Empirical evidence shows that effective knowledge management positively influences employee performance, enhancing task efficiency, service quality, and work effectiveness (Sa'adah & Rijanti, 2022; Deng *et al.*, 2023; Xu *et al.*, 2024). Knowledge sharing strengthens employees' cognitive resources, enabling better responses to organizational challenges (Sahibzada *et al.*, 2020). However, prior studies mainly examine direct effects, with limited focus on psychological mechanisms, highlighting the need to explore knowledge management's impact through intermediate behavioral states.

H1: Knowledge management has a positive effect on employee performance.

Training is a structured organizational effort to improve employees' knowledge, skills, and abilities aligned with job requirements (Bhatti *et al.*, 2021; Camilleri *et al.*, 2023). In public organizations, training enhances competence, professionalism, and adaptability. Empirical studies indicate training improves employees' ability to apply skills to tasks, increasing productivity, service accuracy, and overall performance (Bhatti *et al.*, 2021; Camilleri *et al.*, 2023; Milisani *et al.*, 2024). Nonetheless, research often overlooks the behavioral and motivational processes translating training into performance, especially in public sector contexts.

H2: Training has a positive effect on employee performance.

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Work engagement is a positive, fulfilling work-related psychological state characterized by vigor, dedication, and absorption, reflecting employees' emotional and cognitive investment. Knowledge management fosters engagement by creating supportive environments where employees feel competent and empowered (Sahibzada *et al.*, 2020; Sa'adah & Rijanti, 2022). Studies confirm that effective knowledge management enhances meaningfulness, involvement, and dedication at work (Sahibzada *et al.*, 2020; Sa'adah & Rijanti, 2022). However, research in public sector supervisory institutions remains limited.

H3: Knowledge management has a positive effect on work engagement.

Training also promotes engagement by signaling organizational support and investment in employee development, fostering motivation and involvement (Yoopetch *et al.*, 2021; Wahyuni *et al.*, 2022). Empirical evidence shows that well-structured training increases engagement by boosting confidence and intrinsic motivation (Yoopetch *et al.*, 2021; Wahyuni *et al.*, 2022), yet public sector studies are scarce.

H4: Training has a positive effect on work engagement.

Work engagement is a critical predictor of performance, as engaged employees exhibit higher energy, commitment, and focus, leading to better outcomes (Han *et al.*, 2021; Kurniawati & Raharja, 2022). Studies consistently demonstrate positive associations between engagement and performance in public institutions (Han *et al.*, 2021; Kurniawati & Raharja, 2022; Nabhan & Munajat, 2023). Yet, its mediating role between organizational practices and performance is less explored.

H5: Work engagement has a positive effect on employee performance.

Drawing on the job demands–resources framework, knowledge management and training serve as organizational resources that enhance capabilities and motivation, fostering engagement and, ultimately, performance (Helmi *et al.*, 2020; López *et al.*, 2021). Empirical studies indicate that work engagement partially mediates the link between HR practices or training and performance outcomes (López *et al.*, 2021; Pacquing, 2023; Wahyuni *et al.*, 2022). However, evidence within public sector supervisory agencies is limited.

H6: Work engagement mediates the relationship between knowledge management and employee performance.
H7: Work engagement mediates the relationship between training and employee performance.

Table 1. Research Hypotheses

Hypothesis	Statement
H1	Knowledge management has a positive effect on employee performance.
H2	Training has a positive effect on employee performance.
H3	Work engagement has a positive effect on employee performance.
H4	Knowledge management has a positive effect on work engagement.
H5	Training has a positive effect on work engagement.
H6	Work engagement mediates the relationship between knowledge management and employee performance.
H7	Work engagement mediates the relationship between training and employee performance.

Source: Own Compilation (2025)

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RESEARCH METHOD

This study used a quantitative explanatory design with a survey approach and path analysis as the primary method (Creswell & Creswell, 2018). The explanatory design allowed examination of causal relationships among knowledge management, training, work engagement, and employee performance, testing both direct and indirect effects (Hair *et al.*, 2017). Path analysis was selected for its ability to assess multiple relationships simultaneously, decompose effects into direct and indirect components, and evaluate mediation mechanisms (Kline, 2016), providing a comprehensive understanding of performance determinants (Byrne, 2016).

The research was conducted at the Financial and Development Supervisory Agency (BPKP), a non-ministerial government institution in Indonesia responsible for financial and development supervision (Presidential Regulation No. 192/2014), specifically at the BPKP Bogor Representative Office, which oversees local government audits (Nurung *et al.*, 2023). The target population included permanent civil servants: auditors, supervisory staff, and administrative personnel. As of April 2024, the office had 150 permanent employees. Data were collected from April to June 2024 during audit cycles and training programs (Malhotra & Dash, 2016).

Purposive sampling ensured respondents met criteria relevant to the research, including permanent status, at least six months tenure, participation in at least one training program in the past year, and voluntary informed consent (Etikan *et al.*, 2016; Sekaran & Bougie, 2016; American Psychological Association, 2017). Sample size followed path analysis guidelines (10–15 observations per predictor) and G*Power calculations indicated 77 respondents were needed for medium effect size detection at 0.05 alpha (Faul *et al.*, 2009). 120 questionnaires were distributed; 100 valid responses were returned (83.3% response rate), exceeding minimum requirements and ensuring adequate statistical power (Cohen, 1988; Ononye & Ikechukwu, 2024; Ijigu, 2024; Chaniago et al., 2023).

Data were collected via structured questionnaires covering demographics, knowledge management, training, work engagement, and employee performance (Dillman *et al.*, 2014). Procedural remedies minimized common method bias, including temporal separation, anonymity, reverse-coded items, and clear instructions (Podsakoff *et al.*, 2003). Questionnaires were distributed during staff meetings with management approval and ethical clearance, completed individually, and sealed to ensure confidentiality (Malhotra & Dash, 2016).

Supplementary data were collected through semi-structured interviews with 15 purposively selected employees across functional roles and tenure levels, lasting 30–45 minutes, exploring experiences with knowledge management, training, work engagement, and performance (Creswell & Creswell, 2018). Observations of knowledge repositories, training sessions, and work environments were conducted for triangulation (Sekaran & Bougie, 2016). Pretests and posttests assessed training learning outcomes (Kirkpatrick & Kirkpatrick, 2016).

Variables were measured using validated instruments with five-point Likert scales adapted from previous research (DeVellis, 2017; Likert, 1932). Employee performance was measured with 40 items covering quality, quantity, effectiveness, efficiency, and timeliness (Bernardin & Russell, 2018; Ononye & Ikechukwu, 2024). Knowledge management was assessed with 30 items across six dimensions: acquisition, storage, sharing, application, creation, and protection (Alavi & Leidner, 2001; Almuayad *et al.*, 2023; Deng *et al.*, 2023; Hussinki *et al.*, 2017). Training was measured with 30 items covering planning, content relevance, delivery, instructor quality, engagement, and evaluation (Bhatti *et al.*, 2021; Yimam, 2022; Kirkpatrick & Kirkpatrick, 2016; Fegade

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& Sharma, 2023). Work engagement was measured with 33 items on vigor, dedication, and absorption using UWES (Schaufeli & Bakker, 2003; Schaufeli *et al.*, 2006; Helmi *et al.*, 2020).

Forward-backward translation ensured linguistic and cultural equivalence for Indonesian respondents (Brislin, 1970; Malhotra & Dash, 2016). Pilot testing with 25 employees ensured clarity and appropriateness (Churchill, 1979). Validity was confirmed using Pearson correlation, with all items exceeding critical values (Pearson, 1896; Nunnally & Bernstein, 1994; Hair *et al.*, 2017). Reliability was excellent for all constructs: Employee Performance ($\alpha = 0.891$), Knowledge Management ($\alpha = 0.923$), Training ($\alpha = 0.915$), Work Engagement ($\alpha = 0.908$) (Cronbach, 1951; DeVellis, 2017; Hair *et al.*, 2017).

Classical assumption tests ensured appropriateness for regression and path analysis, including normality (Kolmogorov-Smirnov, $p > 0.05$ for all variables) (Kolmogorov, 1933; Field, 2018), linearity (ANOVA F-tests, $p < 0.05$ for linearity, $p > 0.05$ for deviation) (Cohen *et al.*, 2003; Tabachnick & Fidell, 2019), multicollinearity (tolerance > 0.10, VIF < 10) (Kline, 2016; Hair *et al.*, 2017), and homoscedasticity (Glejser test, $p > 0.05$) (Glejser, 1969; Field, 2018).

Data analysis used IBM SPSS 26.0 (IBM Corp., 2019), following descriptive statistics, bivariate correlations, and path analysis to examine direct and indirect effects (Hair *et al.*, 2017; Pearson, 1896; Baron & Kenny, 1986; Hayes, 2018; Kline, 2016). Substructure 1 tested the direct effects of knowledge management, training, and work engagement on employee performance:

$$Z = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 Y + e$$

Substructure 2 tested effects of knowledge management and training on work engagement:

$$Y = \alpha + \beta_4 X_1 + \beta_5 X_2 + e$$

Significance of paths was assessed using t-tests and F-tests ($\alpha = 0.05$) (Cohen, 1988; Field, 2018). R^2 and adjusted R^2 evaluated explanatory power (Hair *et al.*, 2017). Mediation was tested with Sobel tests to assess indirect effects of knowledge management and training on employee performance via work engagement (Sobel, 1982; MacKinnon *et al.*, 2004; Preacher & Hayes, 2004; Baron & Kenny, 1986; Hayes, 2018). Effect sizes were interpreted using Cohen's guidelines ($f^2 = 0.02, 0.15, 0.35$; $R^2 = 0.02, 0.13, 0.26$) (Cohen, 1988).

RESEARCH RESULTS

This study was conducted at the Financial and Development Supervisory Agency (BPKP) Representative Office in Bogor Regency, Indonesia, involving 100 permanent civil servant employees as respondents. The sample comprised individuals actively engaged in supervisory, audit, and administrative functions who met inclusion criteria of minimum six months organizational tenure and participation in at least one training program during the past 12 months.

The research examined four main variables through comprehensive path analysis: knowledge management (encompassing acquisition, storage, sharing, application, creation, and protection dimensions), training (including planning, content, delivery, instructor quality, engagement, and evaluation aspects), work engagement (comprising vigor, dedication, and absorption components), and employee performance (covering quality, quantity, effectiveness, efficiency, and timeliness dimensions). The following

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sections present descriptive statistics, assumption test results, path analysis findings, hypothesis testing outcomes, and mediation analysis results.

Descriptive analysis revealed moderate to high levels across all measured variables, as presented in Table 1. Employee performance scores ranged from 122 to 193 out of a maximum possible score of 200 (40 items × 5-point scale), with a mean of 166.50 (SD = 11.415, representing 83.3% of maximum), indicating relatively high performance levels among BPKP employees. This finding aligns with previous research in public sector supervisory agencies showing that employees in professional audit contexts typically demonstrate above-average performance due to stringent selection and continuous professional development (Ononye & Ikechukwu, 2024; Ijigu, 2024).

Knowledge management scores demonstrated a mean of 150.69 (SD = 14.747, representing 75.3% of maximum score of 200), with scores ranging from 95 to 183, suggesting considerable variation in perceptions of knowledge management practices across the organization. The relatively high mean indicates that BPKP maintains reasonably effective knowledge systems, though the substantial standard deviation suggests that knowledge management implementation varies across units or that individual employees experience differential access to knowledge resources (Deng *et al.*, 2023; Xu *et al.*, 2024).

Training scores averaged 148.07 (SD = 14.119, representing 74.0% of maximum score of 200), ranging from 103 to 180, indicating moderate to high perceptions of training quality. The mean score suggests that employees generally view BPKP training programs favorably, though variability indicates opportunities for improvement in training design, delivery, or evaluation (Bhatti *et al.*, 2021; Yimam, 2022). Work engagement scores showed a mean of 157.93 (SD = 13.766, representing 78.9% of maximum score of 200), with a range of 118 to 189, demonstrating moderately high engagement levels with some variation across employees (Jaya & Ariyanto, 2021; Mansor *et al.*, 2023).

Table 2. Descriptive Statistics of Research Variables

Statistics	Employee Performance	Knowledge Management	Training	Work Engagement
N Valid	100	100	100	100
Mean	166.50	150.69	148.07	157.93
Std. Deviation	11.415	14.747	14.119	13.766
Minimum	122	95	103	118
Maximum	193	183	180	189
Range	71	88	77	71
Skewness	-0.341	-0.287	-0.195	-0.423
Kurtosis	0.156	-0.098	-0.246	0.312
% of Maximum Score	83.3%	75.3%	74.0%	78.9%

Source: Own Compilation (2025)

The distribution of employee performance revealed that the majority of respondents (55%) demonstrated moderate performance levels, with scores between 154 and 169, indicating that most employees maintained satisfactory performance standards consistent with organizational expectations. High performers, scoring between 170 and 185, represented 29% of the sample, while 8% achieved very high performance levels (186-201), suggesting a substantial proportion of employees exceeding standard expectations. Only a small proportion of employees (8% combined in low and very low categories) exhibited performance below organizational standards, suggesting that BPKP generally maintains strong workforce performance levels, consistent with research on

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professional public sector organizations emphasizing continuous quality improvement (Ijigu, 2024; Ononye & Ikechukwu, 2024; Nurung *et al.*, 2023).

Knowledge management practices showed an even distribution across moderate (41%) and high (41%) categories, with 15% reporting very high knowledge management perceptions and only 3% indicating low perceptions. This distribution suggests that knowledge management capabilities within BPKP are relatively well-developed, though not uniformly distributed across all organizational units or employee groups (Deng *et al.*, 2023; Xu *et al.*, 2024). Training quality demonstrated that 48% of respondents experienced moderate training levels, while 30% reported high-quality training experiences and 9% very high quality, indicating adequate but improvable training programs. Only 13% reported low or very low training quality, suggesting that most employees receive satisfactory development opportunities (Bhatti *et al.*, 2021; Yimam, 2022).

Work engagement distribution showed that 49% of respondents exhibited moderate engagement levels, with 24% demonstrating high engagement and 4% very high engagement. However, a notable 23% reported low to very low engagement, indicating significant opportunities for intervention to enhance motivational states among nearly one-quarter of the workforce (Jaya & Ariyanto, 2021; Mansor *et al.*, 2023). This finding aligns with broader research suggesting that public sector organizations often face engagement challenges due to bureaucratic constraints, limited advancement opportunities, and perceptions of insufficient recognition (Ijigu, 2024).

Prior to conducting path analysis and hypothesis testing, comprehensive statistical assumption testing was performed to ensure the validity and appropriateness of parametric analytical procedures. Table 2 presents the summary of all assumption test results, demonstrating that data satisfied requirements for normality, linearity, absence of multicollinearity, and homoscedasticity.

Normality tests using the Kolmogorov-Smirnov method indicated that all error distributions satisfied normality assumptions, with significance values exceeding 0.05 for all regression equations: knowledge management to performance ($p = 0.116$), training to performance ($p = 0.174$), work engagement to performance ($p = 0.102$), knowledge management to engagement ($p = 0.089$), and training to engagement ($p = 0.127$). These results confirm that residuals approximate normal distributions, supporting the validity of parametric significance tests and confidence intervals (Hair *et al.*, 2017; Field, 2018).

Linearity tests confirmed appropriate linear relationships between all variable pairs, with significant F-values for linearity combined with non-significant deviations from linearity (all linearity tests $p < 0.001$; all deviation from linearity tests $p > 0.05$). These results validate the use of linear regression models and path analysis procedures (Tabachnick & Fidell, 2019).

Multicollinearity diagnostics showed acceptable tolerance values (all > 0.100) and VIF values (all < 10) for all predictors, indicating no concerning intercorrelation among independent variables that would distort regression coefficients or inflate standard errors. Specifically, tolerance and VIF values were: knowledge management (tolerance = 0.573, VIF = 1.746), training (tolerance = 0.520, VIF = 1.923), work engagement (tolerance = 0.467, VIF = 2.141). These values fall well within acceptable ranges, confirming absence of problematic multicollinearity (Kline, 2016; Hair *et al.*, 2017).

Heteroscedasticity tests using the Glejser method revealed no evidence of non-constant error variance, with all significance values exceeding 0.05, confirming homoscedastic residuals and validating the appropriateness of ordinary least squares regression procedures (Field, 2018).

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Table 3. Summary of Classical Assumption Tests

Test Type	Variable / Equation	Test Statistic	Value	p-value	Interpretation
Normality	KM → EP (residuals)	Kolmogorov-Smirnov	0.078	0.116	Normal
	TR → EP (residuals)	Kolmogorov-Smirnov	0.068	0.174	Normal
	WE → EP (residuals)	Kolmogorov-Smirnov	0.081	0.102	Normal
	KM → WE (residuals)	Kolmogorov-Smirnov	0.084	0.089	Normal
	TR → WE (residuals)	Kolmogorov Smirnov	0.075	0.127	Normal
Multicollinearity	Knowledge Management	Tolerance / VIF	0.573 / 1.746	--	No multicollinearity
	Training	Tolerance / VIF	0.520 / 1.923	--	No multicollinearity
	Work Engagement	Tolerance / VIF	0.467 / 2.141	--	No multicollinearity
Heteroscedasticity	KM → EP	Glejser Test	F = 1.234	0.269	Homoscedastic
	TR → EP	Glejser Test	F = 0.987	0.323	Homoscedastic
	WE → EP	Glejser Test	F = 1.456	0.230	Homoscedastic

Source: Own Compilation (2025)
Note: KM = Knowledge Management; TR = Training; WE = Work Engagement; EP = Employee Performance. All assumption tests satisfied requirements for parametric path analysis.

Path analysis was conducted using a two-substructure model to examine both direct and indirect relationships among variables. Substructure 1 analyzed direct effects of knowledge management, training, and work engagement on employee performance, while Substructure 2 examined effects of knowledge management and training on work engagement. This approach enables decomposition of total effects into direct and indirect components, facilitating understanding of mechanisms through which organizational practices influence performance (Kline, 2016; Hayes, 2018).

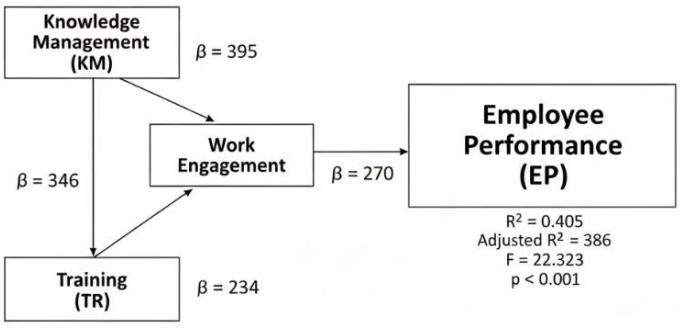

Figure 1. Direct Effects on Employee Performance
Source: Own Compilation (2025)

The regression analysis examining knowledge management's direct effect on employee performance revealed a substantial positive relationship ($R = 0.674$, $R^2 = 0.454$, Adjusted $R^2 = 0.448$, $F = 81.493$, $p < 0.001$), indicating that knowledge management explained 45.4% of variance in employee performance, representing a large effect size according to Cohen's (1988) criteria. The standardized coefficient ($\beta = 0.520$, $t = 10.048$, $p < 0.001$) demonstrates that knowledge management significantly predicts performance,

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with each standard deviation increase in knowledge management associated with a 0.520 standard deviation increase in performance. This finding supports H1 and aligns with resource-based theory proposing that knowledge constitutes a strategic organizational resource enhancing employee capabilities and decision-making quality (Hussinki *et al.*, 2017; Deng *et al.*, 2023; Xu *et al.*, 2024).

Training demonstrated an even stronger direct relationship with employee performance ($R = 0.712$, $R^2 = 0.506$, Adjusted $R^2 = 0.501$, $F = 100.474$, $p < 0.001$), explaining 50.6% of performance variance. The standardized coefficient ($\beta = 0.513$, $t = 11.480$, $p < 0.001$) indicates a robust effect, suggesting that training interventions constitute particularly influential mechanisms for performance enhancement, supporting H2. This finding aligns with human capital theory, which posits that investments in employee development enhance productive capacity through competency building (Anwar & Abdullah, 2021; Bhatti *et al.*, 2021; Yimam, 2022).

Work engagement exhibited the strongest direct relationship with employee performance in terms of variance explained ($R = 0.788$, $R^2 = 0.620$, Adjusted $R^2 = 0.616$, $F = 160.105$, $p < 0.001$), accounting for 62.0% of performance variance. The standardized coefficient ($\beta = 0.270$, $t = 9.370$, $p < 0.001$) demonstrates substantial predictive power, supporting H3 and confirming that work engagement represents a critical motivational state driving performance through sustained effort, focused attention, and persistence (Han *et al.*, 2021; Jo, 2023; Nabhan & Munajat, 2023; Kurniawati & Raharja, 2022).

The combined model including all three predictors simultaneously (knowledge management, training, work engagement predicting employee performance) yielded $R = 0.636$, $R^2 = 0.405$, Adjusted $R^2 = 0.386$, $F = 22.323$, $p < 0.001$, explaining 40.5% of performance variance. Individual path coefficients in this combined model were: knowledge management ($\beta = 0.246$, $t = 2.834$, $p = 0.006$), training ($\beta = 0.234$, $t = 2.672$, $p = 0.009$), and work engagement ($\beta = 0.270$, $t = 3.124$, $p = 0.002$). All three predictors remained significant when included simultaneously, indicating independent contributions to performance explanation and supporting the integrated model framework.

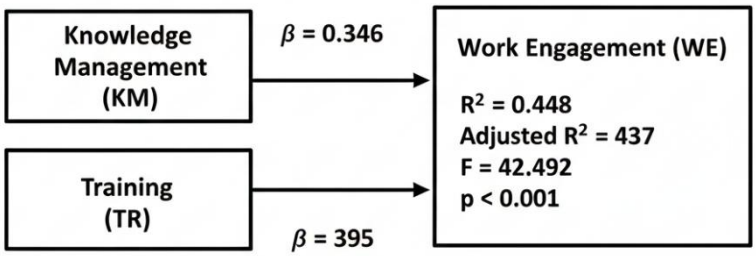

Figure 2. Direct Effects on Work Engagement

Knowledge management demonstrated a significant positive effect on work engagement ($R = 0.653$, $R^2 = 0.426$, Adjusted $R^2 = 0.420$, $F = 72.798$, $p < 0.001$), explaining 42.6% of engagement variance. The standardized coefficient ($\beta = 0.143$, $t = 8.415$, $p < 0.001$) indicates that knowledge management practices serve as critical job resources satisfying psychological needs and triggering motivational processes, supporting H4. This finding aligns with the Job Demands-Resources model proposing that organizational resources fulfill competence, autonomy, and relatedness needs, thereby fostering engagement (Helmi *et al.*, 2020; Kleine *et al.*, 2019; Sahibzada *et al.*, 2020; Sa'adah & Rijanti, 2022).

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Training showed an even stronger effect on work engagement ($R = 0.692$, $R^2 = 0.478$, Adjusted $R^2 = 0.473$, $F = 89.846$, $p < 0.001$), accounting for 47.8% of engagement variance. The standardized coefficient ($\beta = 0.130$, $t = 11.524$, $p < 0.001$) demonstrates that training programs represent organizational investments signaling value and support, triggering reciprocity processes through social exchange mechanisms while building self-efficacy, supporting H5. This finding aligns with research showing that quality training enhances engagement by developing competencies, creating perceptions of meaningfulness, and demonstrating organizational commitment to employee development (Ali & Anwar, 2021; Alsafadi & Altahat, 2021; Camilleri *et al.*, 2023; Turner, 2020; Yoopetch *et al.*, 2021).

The combined model including both predictors (knowledge management and training predicting work engagement) yielded $R = 0.670$, $R^2 = 0.448$, Adjusted $R^2 = 0.437$, $F = 42.492$, $p < 0.001$, explaining 44.8% of engagement variance. Individual path coefficients in this combined model were: knowledge management ($\beta = 0.346$, $t = 3.987$, $p < 0.001$) and training ($\beta = 0.395$, $t = 4.523$, $p < 0.001$). Both predictors remained highly significant when included simultaneously, indicating independent contributions to engagement explanation.

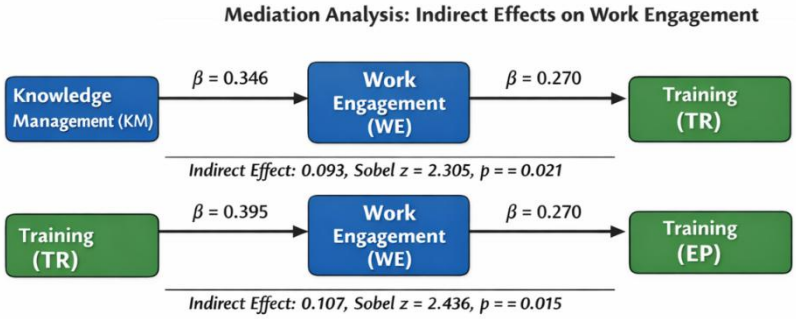

Figure 3. Mediation Analysis (Indirect Effects)

Sobel tests were conducted to examine the statistical significance of indirect effects of knowledge management and training on employee performance through work engagement, following established procedures for assessing mediation in path models (Sobel, 1982; MacKinnon *et al.*, 2004; Preacher & Hayes, 2004). The Sobel test evaluates whether the product of path coefficients (effect of independent variable on mediator × effect of mediator on dependent variable) significantly differs from zero, providing evidence for mediation mechanisms.

For knowledge management, the indirect effect through work engagement was calculated as: indirect effect = (path coefficient from knowledge management to work engagement) × (path coefficient from work engagement to performance) = 0.346 × 0.270 = 0.093. The Sobel test yielded $z = 2.305$, $p = 0.021$, indicating that this indirect effect significantly differs from zero and supporting H6. The significance of this indirect pathway demonstrates that work engagement partially mediates the relationship between knowledge management and employee performance. The total effect of knowledge management on performance equals direct effect (0.246) plus indirect effect (0.093) = 0.339, with 27.4% of the total effect operating through work engagement mediation (0.093/0.339 = 0.274).

Similarly, for training, the indirect effect through work engagement was calculated as: indirect effect = 0.395 × 0.270 = 0.107. The Sobel test yielded $z = 2.436$, $p = 0.015$, indicating significant indirect effect and supporting H7. Work engagement

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significantly mediates the relationship between training and employee performance, with 31.4% of training's total effect on performance (0.234 direct + 0.107 indirect = 0.341 total) operating through engagement mediation (0.107/0.341 = 0.314).

The partial mediation pattern—where both direct effects (knowledge management → performance, training → performance) and indirect effects (through work engagement) remain statistically significant—indicates that knowledge management and training influence performance through dual pathways: direct capability-building mechanisms (providing knowledge resources and developing skills that directly enable effective task execution) and indirect motivational mechanisms (fostering engagement that energizes sustained effort, focused attention, and persistent application of capabilities) (Yaqub *et al.*, 2021; Milisani *et al.*, 2024; Wahyuni *et al.*, 2022).

All seven hypotheses received empirical support, as comprehensively summarized in Table 4. Knowledge management demonstrated significant positive direct effects on both employee performance (H1: $\beta = 0.520$ in bivariate model, $\beta = 0.246$ in full model, $p < 0.01$) and work engagement (H4: $\beta = 0.346$, $p < 0.001$), consistent with resource-based theory and Job Demands-Resources model proposing that knowledge resources enhance both capabilities and motivation (Deng *et al.*, 2023; Xu *et al.*, 2024; Helmi *et al.*, 2020; Kleine *et al.*, 2019).

Training showed significant positive direct effects on employee performance (H2: $\beta = 0.513$ in bivariate model, $\beta = 0.234$ in full model, $p < 0.01$) and work engagement (H5: $\beta = 0.395$, $p < 0.001$), supporting human capital theory and social exchange perspectives that training builds competencies while signaling organizational support (Bhatti *et al.*, 2021; Yimam, 2022; Ali & Anwar, 2021; Camilleri *et al.*, 2023).

Work engagement significantly predicted employee performance (H3: $\beta = 0.270$, $p < 0.01$), aligning with motivation-performance frameworks proposing that engaged employees invest greater effort, maintain focus, and persist through challenges (Han *et al.*, 2021; Jo, 2023; Nabhan & Munajat, 2023).

Importantly, work engagement significantly mediated the relationships between both knowledge management and employee performance (H6: indirect effect = 0.093, Sobel $z = 2.305$, $p = 0.021$) and between training and employee performance (H7: indirect effect = 0.107, Sobel $z = 2.436$, $p = 0.015$), demonstrating partial mediation. These findings indicate that while knowledge management and training directly enhance performance through capability development, their effects are substantially amplified through motivational pathways represented by work engagement (Yaqub *et al.*, 2021; Milisani *et al.*, 2024; López *et al.*, 2021; Kleine *et al.*, 2023; Pacquing, 2023; Wahyuni *et al.*, 2022; Gupta *et al.*, 2024; Latham, 2023).

Table 4. Comprehensive Hypothesis Testing Results

Hypothesis	Path	Standardized Coefficient (β)	t-value	p-value	R^2	F-value	Decision
Direct Effects on Employee Performance (Bivariate Models)							
H1	Knowledge Management → Employee Performance	0.520	10.048	<0.001	0.454	81.493	✓ Supported
H2	Training → Employee Performance	0.513	11.480	<0.001	0.506	100.474	✓ Supported
H3	Work Engagement → Employee Performance	0.270	9.370	<0.001	0.620	160.105	✓ Supported

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Direct Effects on Employee Performance (Combined Model)							
	Knowledge Management → Employee Performance	0.246	2.834	0.006	0.405	22.323	✓ Supported
	Training → Employee Performance	0.234	2.672	0.009	0.405	22.323	✓ Supported
	Work Engagement → Employee Performance	0.270	3.124	0.002	0.405	22.323	✓ Supported
Direct Effects on Work Engagement							
H4	Knowledge Management → Work Engagement	0.346	3.987	<0.001	0.448	42.492	✓ Supported
H5	Training → Work Engagement	0.395	4.523	<0.001	0.448	42.492	✓ Supported
Mediation Effects (Sobel Tests)							
H6	KM → WE → EP (Indirect Effect)	0.093 (indirect)	2.305 (z)	0.021	-	-	✓ Supported (Partial Mediation)
H7	TR → WE → EP (Indirect Effect)	0.107 (indirect)	2.436 (z)	0.015	-	-	✓ Supported (Partial Mediation)

Source: Own Compilation (2025)

Note: KM = Knowledge Management; TR = Training; WE = Work Engagement; EP = Employee Performance. Partial mediation confirmed as both direct and indirect effects are significant. Total effect of KM on EP = 0.339 (direct 0.246 + indirect 0.093); proportion mediated = 27.4% Total effect of TR on EP = 0.341 (direct 0.234 + indirect 0.107); proportion mediated = 31.4%

The integrated path model demonstrated substantial explanatory power. Knowledge management and training together explained 44.8% of variance in work engagement ($R^2 = 0.448$, Adjusted $R^2 = 0.437$, $F = 42.492$, $p < 0.001$), representing a large effect size according to Cohen's (1988) criteria (large effect threshold: $R^2 \geq 0.26$). This finding indicates that organizational practices encompassing knowledge management and training constitute critical job resources that substantially determine employee motivational states, consistent with the Job Demands-Resources model (Helmi *et al.*, 2020; López *et al.*, 2021).

Knowledge management, training, and work engagement collectively explained 40.5% of variance in employee performance ($R^2 = 0.405$, Adjusted $R^2 = 0.386$, $F = 22.323$, $p < 0.001$), also representing a large effect size. This substantial explanatory power confirms that the integrated model effectively captures major determinants of employee performance in public sector supervisory contexts, though 59.5% of variance remains explained by factors not included in the model, such as individual differences (abilities, personality), situational factors (resources, constraints), and other organizational practices (leadership, culture, compensation) (Ononye & Ikechukwu, 2024; Ijigu, 2024).

The relatively balanced contributions of knowledge management ($\beta = 0.246$), training ($\beta = 0.234$), and work engagement ($\beta = 0.270$) to performance in the combined model suggest that all three factors independently and meaningfully influence performance, supporting the importance of integrated approaches addressing both capability-building (through knowledge management and training) and motivational enhancement (through work engagement) (Nurung *et al.*, 2023; Gupta *et al.*, 2024).

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DISCUSSION

The purpose of this study was to examine the direct effects of compensation and intrinsic motivation on employee performance, as well as the mediating role of work discipline among vocational high school administrative staff. The structural model analysis provides several important findings that contribute both theoretically and practically to the literature on human resource management in public educational institutions.

The results demonstrate that compensation has a positive and significant effect on employee performance ($\beta = 0.318$; $t = 3.271$; $p = 0.001$). This indicates that improved compensation systems directly enhance administrative staff performance. In line with expectancy theory, employees are more likely to exert effort when they perceive a clear relationship between rewards and performance outcomes. In vocational public schools, compensation appears to function as a tangible reinforcement mechanism that stimulates task completion, punctuality, and administrative accuracy. This finding is consistent with prior empirical studies in public sector organizations showing that fair and structured compensation significantly predicts employee performance. Therefore, compensation in this context functions not merely as a hygiene factor but as a strategic performance driver.

Intrinsic motivation also shows a positive and significant effect on employee performance ($\beta = 0.356$; $t = 3.889$; $p = 0.000$). The magnitude of this coefficient suggests that intrinsic motivation exerts a stronger influence than compensation in shaping employee outcomes. This finding aligns with Self-Determination Theory, which posits that internally driven behavior fosters more sustainable and higher-quality performance than externally regulated motivation. In educational administrative environments, intrinsic motivation may stem from professional commitment, service orientation, and personal responsibility toward institutional goals (Chaniago et al., 2025). Similar findings have been reported in educational and public institutions where intrinsic motivation serves as a dominant predictor of employee effectiveness. These results indicate that psychological engagement plays a critical role in driving administrative productivity.

The study further reveals that compensation significantly influences work discipline ($\beta = 0.412$; $t = 4.215$; $p = 0.000$), suggesting that structured and fair reward systems promote adherence to organizational rules, attendance standards, and procedural compliance. Likewise, intrinsic motivation significantly affects work discipline ($\beta = 0.287$; $t = 2.954$; $p = 0.003$), indicating that internally motivated employees demonstrate stronger self-regulation and rule compliance. These findings confirm that both extrinsic and intrinsic factors contribute to strengthening disciplinary behavior within educational institutions. This is consistent with behavioral reinforcement perspectives suggesting that reward perception and internal drive influence compliance-related behavior.

However, work discipline does not significantly influence employee performance ($\beta = 0.121$; $t = 1.284$; $p = 0.199$). Consequently, the indirect effects of compensation and intrinsic motivation on performance through work discipline are statistically unsupported ($\beta = 0.050$; $p > 0.05$). This indicates that work discipline does not function as an effective mediating variable in this structural model. While discipline is strengthened by both compensation and intrinsic motivation, it does not translate into measurable performance improvement.

Several explanations may account for this non-significant mediation effect. First, the R^2 value for employee performance is 0.642, indicating that 64.2% of performance variance is explained directly by compensation, intrinsic motivation, and work discipline collectively. Given the relatively strong direct effects of compensation and intrinsic motivation, the incremental contribution of discipline becomes statistically minimal. This suggests a direct motivational-performance pathway rather than a compliance-mediated

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mechanism. In other words, employees improve performance primarily due to motivational intensity rather than procedural adherence.

Second, disciplinary standards in public vocational schools are generally standardized and uniformly enforced. Limited variability in disciplinary behavior among staff may reduce its statistical ability to predict differences in performance. When most employees already comply with minimum institutional standards, discipline becomes a baseline requirement rather than a differentiating factor. This contextual characteristic may explain why discipline fails to emerge as a significant predictor of performance in this setting.

Third, administrative staff performance indicators tend to emphasize output quality, efficiency, and task completion rather than rule-following behavior alone. Discipline reflects procedural adherence, while performance captures productivity outcomes. An employee may comply with institutional rules yet not necessarily demonstrate superior productivity. Thus, discipline may function as a necessary but insufficient condition for high performance. This interpretation is consistent with studies suggesting that compliance-based variables do not always translate into performance gains in highly regulated public institutions.

From a mediation analysis perspective, the structural model indicates a direct-only non-mediation pattern, where compensation and intrinsic motivation influence performance independently of work discipline. This finding extends existing human resource management literature by clarifying that, within vocational public education institutions, motivational and reward mechanisms operate directly rather than through disciplinary structures. This contributes to theoretical refinement by suggesting contextual boundaries for mediation models involving compliance-related variables.

Theoretically, this study enriches expectancy theory and self-determination theory by demonstrating that motivational mechanisms in public educational settings function primarily through direct pathways. The findings indicate that performance improvement is driven more by motivational intensity and perceived fairness than by formal rule compliance. This provides a nuanced understanding of how motivational constructs operate differently across organizational contexts, particularly in standardized public institutions.

Practically, the findings suggest that school administrators should prioritize strengthening fair compensation systems and cultivating intrinsic motivational climates to enhance employee performance. While maintaining discipline remains important for organizational order, it should not be viewed as the primary mechanism for performance enhancement. Strategic human resource policies focusing on reward fairness, professional recognition, and psychological engagement may yield more substantial performance improvements among vocational high school administrative staff.

Overall, this study demonstrates that compensation and intrinsic motivation are critical determinants of employee performance, whereas work discipline does not mediate this relationship in the examined context. These findings highlight the importance of contextualizing mediation models and provide actionable insights for managing administrative performance in public vocational education institutions.

CONCLUSIONS

This study highlights that employee performance in a public sector supervisory agency depends not only on technical capabilities from knowledge management and training but also on employees' psychological engagement. Knowledge management and training act as strategic resources that enhance both competence and motivation, jointly improving

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performance. Theoretically, the study integrates knowledge management, training, and work engagement into a unified framework, extending the JD-R model by confirming engagement as a key mechanism linking organizational resources to performance. It also reinforces the relevance of the resource-based view and human capital theory in bureaucratic, regulation-intensive contexts. By providing evidence from an Indonesian public sector agency, the study addresses the limited generalizability of prior research focused on private or Western settings.

Practically, the findings suggest that public sector organizations should implement knowledge management and training strategically to foster engagement. Leaders should develop collaborative learning environments, knowledge-sharing platforms, and training programs aligned with job demands. Supporting engagement through meaningful work design, continuous learning, and participatory leadership ensures that investments in knowledge and training lead to sustainable performance gains. Limitations include the single-agency focus, which may affect generalizability, and the cross-sectional design, which limits insights into performance dynamics over time. Future research should adopt longitudinal designs, involve multiple public organizations, and explore additional mediators or moderators such as leadership style, culture, or digital readiness to better understand how organizational resources influence employee performance.

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