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CONTRIBUTION OF TRAINING, HUMAN RESOURCE DEVELOPMENT, AND ADAPTIVE CAPABILITY TO EMPLOYEE PERFORMANCE AT SOUTH SUMATRA REGIONAL OFFICE OF THE MINISTRY OF TRANSPORTATION (CLASS IIA)

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Abstract

Improving employee performance requires strengthening competencies through training, human resource development (HRD), and adaptive capability, particularly in responding to changing job demands and dynamic organizational environments. This study aims to analyze and prove the individual (partial) and joint (simultaneous) effects of training, HRD, and adaptive capability on employee performance. Employing a quantitative approach, this research was conducted at the Regional Office of the Ministry of Transportation, South Sumatra (Class IIA). The population comprised all public sector personnel, with a sample of 120 employees selected through purposive sampling based on length of service and prior participation in training or development programs. Data consisted of primary and secondary sources collected via structured questionnaires, observations, and documentation. Multiple linear regression analysis was executed alongside validity, reliability, classical assumption, t-tests, F-tests, and coefficient of determination (R^2) evaluations. The findings reveal that training, HRD, and adaptive capability exert positive and statistically significant effects on employee performance both partially and simultaneously. HRD demonstrates the most dominant influence with a standardized beta coefficient of 0.393, followed by training (β=0.306) and adaptive capability (β=0.172). Concurrently, the three variables account for 31.2% of the variance in employee performance (R^2=0.312; F=17.531; p= 0.000). The novelty of this research lies in the tripartite conceptual integration of short-term operational skill building (training), long-term career and character building (HRD), and psychological-operational flexibility (adaptive capability) within a unified empirical model. By evaluating these constructs simultaneously within a regional public transportation authority, this study bridges prior empirical inconsistencies where isolated HR interventions yielded non-significant results. It demonstrates the systemic complementarity required to sustain public servant performance amid regulatory and digital disruptions. Managerial implications highlight the necessity of integrating needs-based technical training, continuous career development, and organizational cultivation of adaptive capabilities as a strategic policy framework to optimize public service performance..

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INTRODUCTION

In the era of technological disruption, service digitalization, and the dynamics of organizational environments classified as Volatility, Uncertainty, Complexity, and Ambiguity (VUCA), competitive advantage and the effectiveness of government agencies are greatly determined by the quality of human capital (Barrena-martinez & Luna-arocas, 2026; Ramadhan et al., 2026). Employee performance becomes the main pillar of the success of public organizations because the individual contributions of employees directly impact operational smoothness, timeliness, and the quality of public services (Hertati et al., 2023; Syafitri & Adiwaty, 2025). Based on the perspective of Resource-Based View (RBV) and Human Capital Theory, humans are viewed as intangible strategic assets whose intellectual capacity, skills, and performance can be continuously improved through planned human resource investments (Huang et al., 2023; Syafitri & Adiwaty, 2025).

In the context of public service in the transportation sector, such as at the South Sumatra Regional Office of the Ministry of Transportation (Class IIA), employees are faced with strict regulatory demands, modernization of safety systems, and the integration of technology for logistics connectivity services (Hertati et al., 2023; Keltu, 2024; Santhi & Muthuswamy, 2022). This condition demands the presence of human resource qualifications that not only master daily technical procedures but also have a long-term professional development orientation and flexibility in adapting to changes in daily work systems (Ramadhan et al., 2026; Tukiran & Desianti, 2025).

Theoretically, employee performance enhancement is generally pursued through three main instruments: training, human resource development (HRD), and adaptive capability building (Botelho, 2020; Keltu, 2024; Ramadhan et al., 2026). Training focuses on improving short-term practical and technical skills to minimize daily operational errors (Hertati et al., 2023; Keltu, 2024; Santhi & Muthuswamy, 2022). Meanwhile, HRD has a broader scope through continuous education, coaching, and career planning to develop long-term intellectual, ethical, and leadership capacities (Keltu, 2024; Piwowar-Sulej et al., 2026; Tukiran & Desianti, 2025). On the other hand, adaptive performance acts as a psychological and behavioral foundation that enables employees to respond effectively to the dynamics of new tasks, operational crises, and technological disruptions (Huang et al., 2023; Ramadhan et al., 2026; Tang et al., 2024).

Although these three variables are widely recognized as performance determinants, an in-depth review of the existing literature reveals three main gaps, namely: (1) Empirical Gap: Most studies report a positive impact of HR interventions on employee performance (Hertati et al., 2023; Meijerink et al., 2021; Othman & Mahmood, 2022). However, several quantitative studies found contradictory findings. For example, empirical studies on Manufacturing and SMEs show that training and HR development programs fail to have a statistically significant impact on employee performance (Idris et al., 2023). The phenomenon of the insignificant role of training and HRD (Syafitri & Adiwaty, 2025) is also confirmed in other public institutions due to the gap between training materials and actual operational needs in the field (misalignment of training materials). Similarly, adaptive capabilities, their impact on business performance, have been reported to vary and are not always consistent across different organizational scales (Ngatno & Dewi, 2019); (2) Conceptual Gap: Previous research generally examines the influence of training, HRD, or adaptive capability in isolation (fragmented approaches) or only relates them to a single mediating variable such as motivation (Mwangi et al., 2022; Othman & Mahmood, 2022). There is a scarcity of comprehensive

frameworks that integrate aspects of short-term operational technical skill enhancement (training), long-term career and character capacity building (HRD), and employee psychological flexibility (adaptive capability) into a cohesive analytical model; and (3) Contextual Gap: The integration of these three variables has been very limitedly studied in local government agencies in the transportation and public connectivity sector in Indonesia, which has a unique bureaucratic characteristic, namely a combination of rigid compliance with operational regulations and the push for modernization of public services (Hussain et al., 2026; Keltu, 2024).

To address the aforementioned empirical and conceptual gaps, this research offers a novelty in the form of an integrated tripartite conceptual model (systemic complementarity framework). The novelty of this manuscript lies in demonstrating that training, HRD, and adaptive capabilities do not act as standalone interventions, but rather as interlocking assets (Barrena-martinez & Luna-arocas, 2026; Ramadhan et al., 2026). This model provides a theoretical novelty by explaining why training or HRD interventions on their own often fail to boost performance: technical training without HRD triggers career stagnation; HRD without technical training creates execution gaps; and both will become rigid if employees do not equip themselves with adaptive capabilities when facing changes in work systems (Idris et al., 2023; Ramadhan et al., 2026). By simultaneously testing these three variables at the South Sumatra Regional Office of the Ministry of Transportation (Class IIA), this research enriches the literature on public sector HR management by mapping the hierarchy of dominance of independent variable influences and demonstrating their systemic complementarity effects on employee performance improvement. Based on the identification of problems and gaps in the literature above, this study aims to analyze and prove the influence of training, human resource development, and adaptive capability both partially and simultaneously on employee performance.

RESEARCH METHODS

This research uses a quantitative approach with a causal associative design. The research was conducted at the South Sumatra Regional Office of the Ministry of Transportation (Class IIA). The population in this study consists of all active ASN and PPNPN employees within the agency. Sampling was conducted using a non-probability technique through purposive sampling, which is a sample determination technique based on considerations and specific criteria set by the researcher to ensure that the data obtained are relevant to the research objectives. The determination of the sample size of 120 respondents is based on the calculation of sample adequacy for multiple linear regression analysis. To ensure the representativeness and validity of the information, the following inclusion and exclusion criteria.

The inclusion criteria in this study are: employees with active status (ASN) at the South Sumatra Regional Office of the Ministry of Transportation (Class IIA); having a minimum work period of 1 (one) year, thus considered to have an understanding of the work climate, operational SOPs, and the organizational dynamics of the agency; having participated in at least 1 (one) technical training program or HR development program organized by the Ministry of Transportation or related official training institutions; willing to be respondents and fill out the questionnaire completely and objectively.

In order to achieve transparency in the measurement of research instruments, all operational variables tested are extracted into measurable indicators based on

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scientific theory, which are tested using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), as presented in Table 1:

Table 1. Table 1. Operationalization of Research Variables

Variable	Operational Definition	Measurement Indicator	Scale	Primary Reference
Training	A short-term systematic learning process to enhance employees' knowledge, technical skills, and specific work attitudes so they can efficiently carry out daily operational tasks.	Training content; trainer capability; training facilities; learning & skill acquisition; transfer of training	Likert (1-5)	(Mangkunegara & Waris, 2015; Noe, 2020)
Human Resource Development	Long-term organized efforts to expand the intellectual capacity, professional personality, and career potential of employees to face future organizational challenges.	Further education; personality & ethics development; career development opportunities; capacity building & leadership	Likert (1-5)	(Noe, 2020; Robbins & Judge, 2025)
Adaptive Capability	The psychological capacity and behavior of employees in appropriately adjusting their actions to changes in work demands, new technologies, and the dynamic organizational environment.	Task adjustment flexibility; digital/technology adoption; stress & crisis management; creative problem solving; interpersonal adaptability	Likert (1-5)	(Ilgen & Pulakos, 1999; Savickas, 2011)
Employee Performance	The quality and quantity of the actual work results achieved by employees in accordance with the responsibilities and performance standards set by the agency.	Quantity of work; quality of work; timeliness; responsibility & independence; teamwork & interpersonal impact	Likert (1-5)	(Black & Warhurst, 2021; Riwu Kore & Haba Ora, 2022)

Source: Compiled from various references

Data analysis uses the stages of multiple linear regression analysis, which consists of instrument tests (validity and reliability), classical assumption tests (normality, multicollinearity, and heteroscedasticity), and hypothesis tests (t-test and F-test). The results of the analysis are then described.

RESULTS AND DISCUSSION

Instrument Test (Validity and Reliability)

The criteria for testing validity is a correlation coefficient value > 0.30 (Opoku et al., 2022; Sugiyono, 2023). The results of the validity test in Table 2 show that the correlation values of all items from each variable are greater than 0.30, thus the data is valid.

Table 2. Validity Test

Items	Corrected Item-Total Correlation				Results
	Training	Human Resource Developmet	Adaptive Capability	Employee Performance	
1	0.914	0.788	0.900	0.897	Valid
2	0.931	0.790	0.897	0.893	Valid
3	0.928	0.855	0.885	0.883	Valid
4	0.911	0.801	0.851	0.890	Valid
5	0.894	0.775	0.877	0.858	Valid
6	0.959	-	-	-	Valid

Source : Processed data (2026)

The reliability test criterion is a Cronbach's Alpha value > 0.70 (Haba Ora et al., 2026) and the data in Table 3 meet this requirement, making the data reliable for the

research.

Table 3. Reliability test

Variable	Cronbach's Alpha	Items Total	Results
Training	0,967	6	Reliable
Human Resource Development	0,952	5	Reliable
Adaptive Capability	0,907	5	Reliable
Employee Performance	0,890	5	Reliable

Source : Processed data (2026)

Normality Test

The criteria for the normality test is that the Kolmogorov-Smirnov value in its significance is greater than 0.05 (Riwu Kore et al., 2022), and the results of the normality test in this study meet that criterion (Table 4).

Table 4. Results of the normality test

Variable	Asymp.Sig. (2-tailed)	Results
Training	0.125	Normal Data
Human Resource Development	0.119	Normal Data
Adaptive Capability	0.132	Normal Data
Employee Performance	0.200	Normal Data

Source : Processed data (2026)

Multicollinearity Test

The criteria for the multicollinearity test are a VIF (variance inflation factors) value > 10 and a tolerance value < 0.1 (Marnisah et al., 2022). he results of the multicollinearity test in Table 5 show that the data from this study meet the multicollinearity test criteria.

Table 5. Multicollinearity test results

Variable	Tolerance	VIF	Results
Training	0.670	1.149	No multicollinearity
Human Resource Development	0.670	1.149	No multicollinearity
Adaptive Capability	1.000	1.000	No multicollinearity

Source : Processed data (2026)

Heteroskedasticity Test

The heteroskedasticity test criterion using the Glesjer test is that the significance probability of each independent variable is greater than 0.05 (Riwu Kore et al., 2022), and the data from this study meet the Glesjer test criteria (Table 6).

Table 6. Results of the heteroscedasticity test

Variable	Significance Glesjer Test	Results
Training	0,130	Homogenous Data
Human Resource Development	0,258	Homogenous Data
Adaptive Capability	0,138	Homogenous Data

Source : Processed data (2026)

Multiple Linear Regression Analysis

The results of the multiple linear regression analysis are shown in Table 7, indicating that the model equation from the research is Y = 0.094 + 0.306TR + 0.393HRD + 0.172AC + e. Based on this equation, the greatest influence on employee performance, in order, is human resource development, followed by training, and adaptive ability.

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Table 7. Multiple linear regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig
		B	Std. Error	Beta		
1	(Constant)	.904	.468		1.933	.056
	Training	.249	.063	.306	3.948	.000
	Human Resource Development	.366	.072	.393	5.060	.000
	Adaptive Capability	.213	.096	.172	2.227	.0028

Source : Processed data (2026)

The results of the statistical test in Table 6 to show the partial effect (t-test) indicate that the overall calculated t-value is greater than the t-table value of 1.98010 with a significance level of $\alpha < 0.05$, meaning that all exogenous variables in the study have a positive and significant effect on employee performance partially.

The results of the statistical test in Table 8 to prove the simultaneous effect (F-test) indicate that the calculated F-value > F-table (2.45) with $\alpha < 5\%$ (0.05), meaning that all exogenous variables have a positive and significant effect on employee performance simultaneously.

Table 8. F-test results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.397	3	14.132	17.531	.000[b]
	Residual	93.509	116	.806		
	Total	135.906	119			

Source : Processed data (2026)

Results of the coefficient of determination test (Table 9). Based on the multiple correlation coefficient, an R value of 0.559 indicates that together, there is a moderate/strong correlation between the variables of training, human resource development, and adaptive ability with employee performance. The R2 value of 0.312 indicates that 31.2% of the variation or fluctuation in employee performance can be explained by the combination of the three independent variables. The remaining 68.8% is explained by other factors outside this regression model, such as work motivation, leadership style, organizational culture, compensation, and work-life balance. The Adjusted R2 value of 0.294 provides a more accurate picture of the variance proportion by taking into account the number of independent variables and the sample size. This confirms that the pure contribution of the three independent variables consistently falls within the range of 29.4%. The standard error of the estimate value of 0.89784 indicates a low level of prediction error precision for the model, which shows that the deviation between the predicted employee performance values and the actual values in the field is relatively small.

Table 8. Coefficient of determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.559[a]	.312	.294	.89784

Source : Processed data (2026)

The Influence of Training on Employee Performance

Based on the results of the multiple linear regression analysis in Table 6, it shows that the training variable has a positive and significant partial effect on employee performance. The positive direction of the relationship indicates that every one-unit increase in the effectiveness or quality of the training program will be followed by an increase in employee performance. These findings reinforce the foundation of Human Capital Theory developed by Schultz (2021), where training is positioned as a strategic

organizational investment to equip human capital with knowledge, technical skills, and individual operational capabilities (intangible human capital). Noe (2020), states that training is a systematic learning process designed to change attitudes and enhance employees' mastery of work skills so that they can perform their current tasks with higher levels of effectiveness and efficiency. The improvement of competencies through training impacts the minimization of human work errors, mastery of operational procedures, and efficiency in task completion time (timeliness), which directly boosts the achievement of both the quantity and quality of individual work results (Hussain et al., 2026; Syafitri & Adiwaty, 2025).

The research results are consistent with several findings from researchers that prove the crucial role of training on work performance in various fields. Research in the public service and government sector shows that training has a positive and significant impact on the performance of state apparatus (Pakpahan et al., 2023). Research by (Hussain et al., 2026) indicates that training in operational technical competencies significantly improves task efficiency and employee productivity. Research in the banking sector shows that training significantly contributes to the enhancement of employee performance, with the learning dimension being the most dominant aspect in shaping work effectiveness (Syafitri & Adiwaty, 2025). Research in the manufacturing, service, and business sectors also produced findings that the contribution of training is very high to performance (Guan & Frenkel, 2019; Meijerink et al., 2021; Wulansari & Mathori, 2026).

The results of this research contradict several researchers (literature) who state that training does not have a significant impact on employee performance. The findings of (Borresen & Lambert, 2009) and (Jones et al., 2013) indicate that training does not have a significant impact on performance. City et al. (2023) reported that the perception of training does not have a significant direct impact on performance. The difference (gap) in these findings can be explained by the effectiveness of training implementation in the field. Literature shows that training becomes insignificant when the material presented is too theoretical, not based on a real needs analysis (training needs assessment), does not simulate daily operational work conditions, or is conducted merely as a formality without impact evaluation (post-training evaluation). Meanwhile, significant findings in this study prove that when training programs are designed in a structured manner, relevant to the demands of technical tasks, and oriented toward enhancing practical work capabilities, the training effectively transforms individual competencies into tangible performance outcomes for the organization.

While the empirical findings demonstrate that the training variable has a positive and significant partial effect on employee performance ($\beta=0.306$, $p=0.000$), this result elevates the theoretical debate beyond conventional Human Capital Theory (Jimoh et al., 2025) by contrasting with prior empirical evidence of competency rigidity (Idris et al., 2023), thereby proving that training translates into actual performance only when characterized by high task relevance and operational transferability (Idris et al., 2023; Zhuang et al., 2021).

Practically, these results imply for organizational management that improving employee performance through training cannot be done partially. Organizations need to routinely conduct training needs assessments, adjust delivery methods to be more applicable, and provide a post-training work environment that supports the implementation of new knowledge to maintain productivity sustainability (City et al., 2023; Hertati et al., 2023; Idris et al., 2023).

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The Influence of Human Resource Development on Employee Performance

Based on the results of the multiple linear regression analysis in Table 6, it shows that the variable of human resource development has a positive and significant partial effect on employee performance. The positive direction of the relationship indicates that every one-unit increase in the effectiveness or quality of the HR development program will be followed by an increase in employee performance. Specifically, the coefficient value of this variable, which is the highest among the three variables, confirms that HR development contributes relatively the most dominantly in a partial manner to the improvement of employee performance.

These findings align with the Human Capital Theory framework, which posits that the accumulation of employees' intellectual capacity, professionalism, and morale constitutes the organization's primary intangible capital (Schultz, 2021). The synthesis of the opinions of Robbins & Judge (2025) and Noe (2020), states that human resource development is an organized long-term effort to expand employees' capabilities, conceptual knowledge, and emotional capacity. Unlike technical training, which focuses on fulfilling short-term operational tasks, HRD programs encompass continuous education, mentoring, coaching, and structured career planning. This long-term investment transformatively shapes character, internal motivation, and professional responsibility, which directly impacts the quality and quantity of employee work results (Hertati et al., 2023; Hussain et al., 2026; Lim, 2023; Meijerink et al., 2021; Syafitri & Adiwaty, 2025; Wulansari & Mathori, 2026).

The findings of this research reinforce other empirical findings that prove HRD programs have a positive and significant partial effect on employee performance (Akdere & Egan, 2020; Meijerink et al., 2021; Wulansari & Mathori, 2026). Syafitri & Adiwaty (2025) report that HRD has proven to be the most dominant indicator in shaping employee performance, namely integrity, ethics, and adaptability. (Hussain et al., 2026) reported that the HRD program significantly increased service productivity both directly and through mediation. Similarly, (Hertati et al., 2023) reported that human resource development through formal education and professional competency development has a positive and significant impact on the performance of the apparatus.

While the empirical findings demonstrate that the human resource development variable has a positive and significant partial effect on employee performance (β=0.393, t=5.060, p=0.000), this result reinforces the theoretical foundations of the Resource-Based View (RBV) while resolving prior empirical contradictions, proving that long-term character, ethical, and career-oriented HRD investments serve as the most dominant predictor of employee productivity.

The findings of this study differ from the research by (Idris et al., 2023) which reported that HR development does not significantly affect employee performance. The cause of the gap in the insignificance of the HRD role is the misalignment between the development programs organized by the company and the actual competency needs for the employees' job positions. Unstructured development programs lead to competency gaps without translating knowledge into concrete work outputs. Meanwhile, the highly significant and dominant finding in this research proves that if the HRD program is designed to be integrated with job requirements, oriented toward the development of work personality, and supported by clear career paths, then HRD will act as the primary driver in optimizing employee performance.

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The Influence of Adaptive Ability on Employee Performance

Based on the results of the multiple linear regression analysis in Table 6, it shows that the adaptive ability variable has a positive and partially significant effect on employee performance. The positive direction of the relationship indicates that every one-unit increase in adaptive capability will be followed by an increase in employee performance. Although its relative contribution value is below HRD and training, adaptive capability remains a crucial psychological foundational variable amidst the uncertainty of the work environment.

These findings reinforce Mark L. Savickas thinking on Career Construction Theory (CCT) that individuals build their careers and performance through adaptation strategies that apply their personalities to job roles in dynamic environments. Employees with high flexibility will demonstrate adaptive work responses, resulting in constructive adjustments (Huang et al., 2023; Loughlin & Priyadarshini, 2021). Moreover, these findings align with the Adaptive Performance taxonomy by Ilgen & Pulakos (1999), where adaptive ability reflects an individual's capacity to solve problems creatively, manage work situations filled with uncertainty, quickly learn new technologies/SOPs, and maintain harmonious interpersonal relationships during organizational changes.

Empirically, the role of adaptive ability is supported by various field studies. In the private sector and commercial business, adaptive capabilities have been proven to have a very strong positive and significant impact on employee performance (Syamsuri et al., 2022). That adaptability in the research by Bataineh et al. (2022) significantly encourages innovative work behavior and performance. Research in the financial services sector, (Boateng et al., 2026) reported that adaptive capabilities based on inner peace and moral values significantly improve the quality of service performance. Research in the bureaucracy and public service sector shows that adaptive work behavior significantly improves the performance of state apparatus in addressing disruptions in digital-based service systems (Mutiarin et al., 2024). Similarly, in the research by (Suryanto et al., 2023) adaptive capability has a positive impact on individual performance.

This study reveals an empirical gap when compared to the findings of (Huang et al., 2023) which indicate that adaptive capability has a positively insignificant effect on performance. Similarly, the research by Ngatno & Dewi (2019) reported that the influence of adaptive capability on performance tends to weaken as the scale of the company's assets (firm size) increases and the age of the organization (firm age) grows older. The cause of the insignificant gap in the influence of adaptability on new employees (CPNS) in the study by (Suryanto et al., 2023) is due to the limited working hours and concrete experience. Adaptability requires a sufficient understanding of the task context, because without basic work experience, the adaptation of new employees has not yet been able to be converted into work efficiency. Meanwhile, the research by Ngatno & Dewi is related to the company's business performance. Thus, the findings of a positive and significant influence in this study affirm that for employees who have a mature operational understanding, adaptive ability becomes a critical asset that enables them to assimilate new knowledge from training and HRD into real actions amidst changes in the work environment.

While the empirical findings demonstrate that the adaptive capability variable has a positive and significant partial effect on employee performance (β=0.172, t=2.227, p=0.0028), this result expands the theoretical discourse of Career Construction Theory

(CCT) and resolves the debate surrounding bureaucratic inertia, proving that psychological and operational flexibility acts as a crucial catalyst in transforming technical knowledge into actual performance amidst dynamic organizational changes.

The Influence of Training, Human Resource Development, and Adaptive Capability on Employee Performance

The results of the F-test (simultaneously) in Table 7 show that simultaneously (together), the variables of training, human resource development, and adaptive capability have a positive and significant effect on employee performance. These results confirm that the developed multiple linear regression model has an excellent goodness of fit, making the combination of the three independent variables suitable and reliable for predicting changes in employee performance.

The R^2 (31.2%) and F (17.531) results confirm that improving employee performance cannot be entrusted to a single intervention. Training plays a role in providing mastery of short-term operational technical skills, while human resource development expands intellectual capacity and work ethics in the long term, and adaptive ability offers employees the psychological resilience to respond to organizational change dynamics (Hertati et al., 2023; Meijerink et al., 2021; Zhao et al., 2025).

While the empirical findings demonstrate that the training, human resource development, and adaptive capability variables have a positive and significant simultaneous effect on employee performance, this result offers a major theoretical contribution by resolving the isolation paradox, proving that these three HR instruments operate as interlocking assets within a systemic complementarity framework to drive substantial and sustainable performance gains.

These simultaneous findings address the research gap from several previous studies that reported that training or HRD, when considered partially, sometimes does not have a significant impact. This simultaneous testing proves that when training and HRD are integrated with the development of employees' adaptive capabilities, these three variables complement each other (interlocking system), thereby collectively contributing significantly to the achievement of targets and the quality of employees' work.

CONCLUSION

Research at the South Sumatra Regional Office of the Ministry of Transportation (Class IIA) proves that training, human resource development, and adaptive capacity have a positive and significant impact on employee performance, both partially and simultaneously ($F=17.531$; $p=0.000$; $R^2=0.312$). Human resource development emerges as the most dominant predictor ($\beta=0.393$), followed by training ($\beta=0.306$) and adaptive capacity ($\beta=0.172$). These findings confirm the existence of systemic complementarity, where the three HR instruments act as interlocking assets that complement each other in boosting bureaucratic productivity.

Theoretically, the dominance of HR development strengthens the basis of the Resource-Based View (RBV) and Human Capital Theory, while simultaneously solving the isolation paradox by proving that a single HR intervention will not be optimal if not supported by the adaptive flexibility of employees in the field. Practically, agency leaders are advised to institutionalize coaching and mentoring programs based on a merit system, conduct technical training based on Training Needs Assessment (TNA)

complemented by post-training impact audits, and create an adaptive work culture by providing psychological safety in the adoption of new digital service technologies.

The main limitations of this study lie in the use of a cross-sectional design, a limited sample size (N=120), the presence of residual variance of 68.8%, and the potential for self-report bias. Therefore, future research is recommended to apply a longitudinal approach to measure the training decay rate, integrate moderating/mediating variables such as transformational leadership and digital organizational culture, and expand cross-institutional comparative studies using a mixed-methods approach.

Statement on the Use of Artificial Intelligence.

AI was not used in the preparation of this manuscript. The authors did not use artificial intelligence tools to generate, analyze, or modify the content of this article. The authors are fully responsible for the accuracy, originality, integrity, and academic content of the manuscript.

Conflicts of interest

"The authors declare no conflict of interest."

Author contributions

Conceptualization, Putra Anugrah Mahesa and Tien Yustini; data collection, Putra Anugrah Mahesa; data validation, Putra Anugrah Mahesa; formal analysis, Muhammad Wadud and Tien Yustini; writing—original draft preparation, Tien Yustini; writing—review and editing, Muhammad Wadud; visualization, Tien Yustini. All authors have read and approved the final version of the manuscript.

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