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Training and Work Environment Effects on Employee Performance: Leadership as a Mediator

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ABSTRACT

Employee performance at Taman Nongsa Indah Village, Batam remained below the company target while training access was uneven across employee-tenure groups. This study examines the direct effects of training and work environment on employee performance and evaluates leadership as a mediating mechanism. A quantitative cross-sectional causal-associative design was applied to a census of all 60 employees, using a five-point Likert questionnaire and path analysis in IBM SPSS Statistics 26. Training (M = 4.25), work environment (M = 4.35), and employee performance (M = 4.28) were rated very good, while leadership (M = 4.16) was rated good. Training positively predicted performance (β = 0.213, p = 0.006) and leadership (β = 0.289, p = 0.001), while work environment predicted performance (β = 0.201, p = 0.022) and leadership (β = 0.273, p = 0.008). Leadership predicted performance (β = 0.328, p = 0.002) and partially mediated both relationships. Indirect effects were 0.0948 for training and 0.0895 for work environment, accounting for 30.80% and 30.82% of the respective total effects. The findings indicate that training and workplace resources are more likely to translate into performance when leadership provides coaching, coordination, and follow-through.

1. INTRODUCTION

Employee performance is central to hospitality operations because service quality depends on how consistently employees execute tasks, respond to guests, and coordinate across departments. Performance management therefore requires clear standards, feedback, and development mechanisms rather than reliance on output scores alone [1]. Training is one mechanism through which organizations build job-relevant knowledge and skills. Well-designed training can improve learning and job behavior when content, practice, and transfer conditions are aligned [2]. Meta-analytic evidence also indicates positive average effects of organizational training on learning and performance, although the magnitude varies across training design and evaluation criteria [3].

The practical issue at Taman Nongsa Indah Village, Batam is more specific. Internal HR records show that average employee performance increased from 80.1 in 2023 to 80.4 in 2024 but remained below the company target of 85.0. Employees with less than five years of service represented 51.67% of the workforce and were reported to have a turnover rate of 19.35%. Training access was also uneven: only 27 of 60 employees had attended training, including only four of 31 employees with less than five years of service, compared with all 13 employees with more than ten years of service. These patterns matter because training does not automatically transfer to the job; trainee characteristics, training design, and workplace conditions jointly influence whether new capability is used in practice [4]. Support and opportunity to perform are also recurrent determinants of training transfer [5].

Prior research has often examined training, work environment, leadership, and performance as separate relationships. The unresolved issue is how these organizational conditions operate together in a hospitality workforce where development opportunities are uneven and many employees are relatively new. This study addresses that gap by positioning leadership as a proximal mechanism through which

training and work-environment conditions may translate into employee performance. The objective is to estimate the direct effects of training, work environment, and leadership on employee performance and to test whether leadership partially mediates the training-performance and work-environment-performance relationships.

2. LITERATURE REVIEW

2.1. Theoretical Foundation

The framework integrates training-transfer theory, the Job Demands-Resources perspective, and leadership theory. Work design influences motivation, learning, health, and performance because job characteristics determine whether employees can apply their capabilities effectively [6]. The Job Demands-Resources model distinguishes demands that consume employee resources from job resources that help employees achieve work goals [7]. Resources such as supervisory support, role clarity, feedback, and autonomy become especially valuable when work demands are high [8]. In this study, the work environment is therefore treated as a set of physical, social, and organizational conditions that can facilitate or constrain performance.

Leadership provides the second theoretical mechanism. Meta-analytic evidence links transformational and transactional leadership with important performance-related criteria [9]. Transformational leadership emphasizes direction, individualized support, and employee development [10], while broader leadership theory highlights the leader role in allocating resources, clarifying expectations, coaching employees, and coordinating work [11]. These functions make leadership a plausible mediator because training and workplace conditions can be translated into daily behavior through leader support, follow-up, and resource decisions.

Hospitality studies reinforce this logic. Transformational leadership has been associated with employee identification, engagement, and performance [12]. Among hotel newcomers, leadership can improve performance through positive affect and perceived supervisor support [13]. Leadership styles can also shape psychological empowerment and engagement among hospitality workers [14], while leader competencies have been linked with knowledge sharing and job performance [15]. More recent hotel research indicates that empowering leadership can strengthen the performance value of high-performance HR practices [16].

The training-transfer literature further shows why leadership and the work environment should be considered alongside training. Transfer climate and supervisor support influence whether learning is reinforced after formal training [17]. Reviews of training transfer identify opportunity to use new skills, feedback, and managerial support as recurring determinants [18]. Practical transfer research therefore recommends aligning training content with work demands and establishing post-training reinforcement [19]. In hotel settings, high-performance work practices can influence employee performance through motivational mechanisms [20], while organizational resources can strengthen engagement and service-related outcomes [21].

2.2. Hypothesis Development

Recent studies published in the Journal of Multidimensional Management provide complementary evidence from Indonesian hospitality workplaces. Job training and work experience have been associated with waiter quality [22]. Work environment has been examined as an antecedent of employee job satisfaction in a Batam resort [23]. Perceived organizational support has been linked with employee performance through work-life balance [24], while communication and motivation have been associated with employee productivity [25]. Work-life balance and work discipline have also been linked with hotel employee performance [26]. Taken together, this evidence supports the relevance of employee development and workplace conditions, but it does not directly test the combined training-work-environment-leadership mechanism examined in this study.

Training can improve employee performance when it develops job-relevant knowledge and when employees are able to apply that knowledge at work. Accordingly, the first hypothesis proposes a positive direct relationship between training and employee performance.

H1. *Training positively affects employee performance.*

A supportive work environment provides the physical, social, and organizational resources required to complete tasks effectively. Employees who perceive better work conditions should therefore be more capable of achieving performance standards.

H2. *Work environment positively affects employee performance.*

Leadership influences performance through direction, coordination, feedback, support, and resource allocation. Effective leadership should therefore be positively related to employee performance.

H3. *Leadership positively affects employee performance.*

Training systems can shape how employees perceive leadership when supervisors allocate development opportunities, coach employees, and reinforce learning after training. A well-managed work environment similarly reflects leader-controlled decisions about communication, resources, fairness, and coordination.

H4. *Training positively affects perceived leadership effectiveness.*

H5. *Work environment positively affects perceived leadership effectiveness.*

If leadership helps employees translate training and workplace resources into daily work behavior, it should carry part of the effect of both antecedents to performance. Because direct effects are also expected, the mediation is proposed as partial rather than full.

H6. *Leadership partially mediates the relationship between training and employee performance.*

H7. *Leadership partially mediates the relationship between work environment and employee performance.*

3. METHOD

3.1. Research Design and Context

The study used a quantitative cross-sectional causal-associative design to estimate direct and indirect relationships among training, work environment, leadership, and employee performance. The unit of analysis was the individual employee at Taman Nongsa Indah Village, Batam, an integrated hospitality and tourism property. The design was selected because the study sought to estimate associations among measured organizational constructs within a defined employee population rather than manipulate workplace conditions.

3.2. Population, Sample, and Data Collection

The population comprised all 60 employees of Taman Nongsa Indah Village, Batam. Because the population was small and accessible, a census or total-sampling approach was used so that every eligible employee was invited to participate [27]. Data were collected from February to March 2025. Eligible respondents were active permanent or contract employees who had worked at the study site for at least three months. Internal contextual figures on tenure, turnover, performance, and training participation were compiled from the Human Resources Department Employee Performance Recap, Employee Tenure and Turnover Recap, and Training Participation Log covering January 2023 to December 2024.

3.3. Measures

All constructs were measured using a five-point Likert scale. The final instrument consisted of 44 items: 10 items for training, 11 for work environment, 11 for leadership, and 12 for employee performance. Questionnaire development and measurement assessment followed conventional multivariate-research principles [28]. Corrected item-total correlations ranged from 0.421 to 0.782 for training, 0.438 to 0.816 for work environment, 0.407 to 0.795 for leadership, and 0.446 to 0.831 for employee performance. Cronbach's alpha values were 0.889, 0.914, 0.901, and 0.926, respectively, indicating satisfactory internal consistency.

3.4. Data Analysis

Data were processed using IBM SPSS Statistics 26. Descriptive analysis used mean scores on the five-point scale. Equal-width intervals were used for interpretation: 1.00-1.80 = very poor, 1.81-2.60 = poor, 2.61-3.40 = fair, 3.41-4.20 = good, and 4.21-5.00 = very good. Path analysis was estimated through two regression equations: training and work environment predicting leadership, followed by training, work environment, and leadership predicting employee performance. Regression diagnostics followed standard SPSS procedures [29].

Indirect effects were calculated as the product of the relevant a and b paths. The Sobel statistic was used as reported in the original analysis [30], and mediation interpretation also considered the indirect effect relative to the total effect [31]. Because the Sobel test relies on a normal-theory approximation, bootstrap confidence intervals are generally preferred when the original dataset is available [32]. Future re-analysis should therefore confirm the indirect effects using bootstrap procedures consistent with current mediation guidance [33]. Because all focal constructs were collected from the same questionnaire, interpretation also recognizes the possibility of common-method bias [34].

3.5. Ethical Considerations

The study was conducted as a minimal-risk, anonymous employee survey. Participation was voluntary, respondents were informed of the purpose of the study before completing the questionnaire, and the information provided was used solely for academic research. No personally identifying information was reported in the analysis.

4. RESULTS

4.1. Respondent Characteristics

All 60 employees were included in the analysis. Men represented 90.0% of respondents and women 10.0%. The largest departmental groups were Security (36.7%), Maintenance (18.3%), Housekeeping (13.3%), and Landscape (12.3%). Most respondents were staff-level employees (81.7%), and the most common tenure category was two to five years (36.7%). The composition indicates that the findings primarily reflect operational employees and should not be generalized to managerial populations outside the study site.

4.2. Descriptive Results

The descriptive mean scores are presented in Table 1. Training, work environment, and employee performance were classified as very good, while leadership was classified as good.

Table 1. Descriptive mean scores

Variable	Mean	Interpretation
Training	4.25	Very good
Work environment	4.35	Very good
Leadership	4.16	Good
Employee performance	4.28	Very good

4.3. Regression Diagnostics

Regression diagnostics are summarized in Table 2. Residual-normality tests for both path equations exceeded 0.05. The archived Glejser results were also nonsignificant, and the available tolerance and variance inflation factor values for the leadership equation did not indicate problematic multicollinearity. The source output did not provide a complete three-predictor multicollinearity table for the employee-performance equation, so no additional values are inferred.

Table 2. Summary of regression diagnostics

Diagnostic	Model / predictor	Statistic	Interpretation
Residual normality	Leadership equation	$p = 0.200$	No evidence of non-normal residuals
Residual normality	Employee-performance equation	$p = 0.176$	No evidence of non-normal residuals
Glejser test	Training	$p = 0.723$	No evidence of heteroscedasticity
Glejser test	Work environment	$p = 0.651$	No evidence of heteroscedasticity
Glejser test	Leadership	$p = 0.689$	No evidence of heteroscedasticity
Multicollinearity	Training, leadership equation	Tolerance = 0.487; VIF = 2.054	Within diagnostic limits
Multicollinearity	Work environment, leadership equation	Tolerance = 0.472; VIF = 2.119	Within diagnostic limits

4.4. Path Analysis and Direct Hypotheses

Table 3 summarizes the two path models. Training and work environment jointly explained 46.5% of the variance in leadership ($R^2 = 0.465$), and the model was significant, $F = 23.935$, $p < 0.001$. Training positively predicted leadership ($\beta = 0.289$, $p = 0.001$), and work environment also positively predicted leadership ($\beta = 0.273$, $p = 0.008$). In the employee-performance equation, training, work environment, and leadership jointly explained 54.9% of the variance ($R^2 = 0.549$), $F = 23.025$, $p < 0.001$. Training ($\beta = 0.213$, $p = 0.006$), work environment ($\beta = 0.201$, $p = 0.022$), and leadership ($\beta = 0.328$, $p = 0.002$) all had positive significant coefficients.

Table 3. Path-analysis results

Hypothesis	Path	β	t	p	Decision
H1	Training → Employee performance	0.213	2.883	0.006	Supported
H2	Work environment → Employee performance	0.201	2.358	0.022	Supported
H3	Leadership → Employee performance	0.328	3.210	0.002	Supported

Hypothesis	Path	β	t	p	Decision
H4	Training → Leadership	0.289	3.521	0.001	Supported
H5	Work environment → Leadership	0.273	2.751	0.008	Supported

Model 1: $R^2 = 0.465$, $F = 23.935$, $p < 0.001$. Model 2: $R^2 = 0.549$, $F = 23.025$, $p < 0.001$.

4.5. Mediation Analysis

The two mediation hypotheses were tested separately. For H6, the indirect effect of training through leadership was 0.289 × 0.328 = 0.0948. The Sobel statistic was z = 2.376. Because the direct training-performance path remained significant (β = 0.213, p = 0.006), the pattern indicates partial mediation. The total effect was 0.3078, giving a variance-accounted-for ratio of 30.80%. For H7, the indirect effect of work environment through leadership was 0.273 × 0.328 = 0.0895, with Sobel z = 2.091. The direct work-environment-performance path remained significant (β = 0.201, p = 0.022), again indicating partial mediation. The total effect was 0.2905, and the corresponding ratio was 30.82%.

Table 4. Mediation results

Hypothesis	Indirect path	Indirect effect	Sobel z	VAF	Decision
H6	Training → Leadership → Performance	0.0948	2.376	30.80%	Supported, partial mediation
H7	Work environment → Leadership → Performance	0.0895	2.091	30.82%	Supported, partial mediation

VAF = indirect effect / total effect × 100. The two ratios are nearly identical because the direct and indirect effects are proportionally similar.

5. DISCUSSION

5.1. Interpretation of Principal Findings

Training was positively associated with employee performance (β = 0.213, p = 0.006), but the site-specific HR pattern shows that access to training was concentrated among longer-tenured employees. The performance implication is therefore not simply to increase training volume. Training should be directed toward demonstrated competency gaps and should include opportunities to apply learning. Prior research shows that training effectiveness depends on individual and situational conditions surrounding learning and transfer [35]. Leadership development is also relevant because leader behavior can itself be strengthened through training and can influence employee-related outcomes [36].

Work environment positively predicted employee performance (β = 0.201, p = 0.022). This result is consistent with the view that job characteristics and leader behavior jointly shape employee motivation and work behavior [37]. The managerial interpretation should not be limited to physical facilities. Social coordination, cross-shift handovers, peer support, and access to operational resources determine whether employees can convert favorable workplace conditions into effective service delivery.

Leadership had the largest standardized coefficient among the three predictors in the employee-performance equation (β = 0.328, p = 0.002). This is the largest standardized association within the specified model, not proof that leadership is the single most causally important determinant of performance. Broader evidence links transformational leadership with work performance through motivational mechanisms [38], and meta-analytic research shows that leadership-performance relationships vary across performance criteria and organizational levels [39].

Training and work environment also positively predicted perceived leadership effectiveness. These paths should be interpreted as perceptual and organizational relationships rather than as evidence that training or workplace conditions mechanically create leadership. In this setting, employees may experience leadership through coaching, feedback, development allocation, communication, resource availability, fairness, and coordination. Training-motivation research similarly shows that learning and transfer are shaped by contextual and managerial conditions [40].

Leadership partially mediated both focal relationships. This pattern suggests that part of the value of training and workplace conditions may be realized through employees' experience of leader support and coordination. The indirect effects were meaningful but did not eliminate the direct paths, indicating that leadership complements rather than replaces the direct performance relevance of training and the work environment. Research on hotel HR practices likewise shows that leadership can alter how organizational practices translate into employee performance [41].

5.2. Theoretical Contributions

The study contributes by integrating three mechanisms that are often examined separately. First, training-transfer theory explains why participation in training is insufficient unless learning is supported after the program. Second, the Job Demands-Resources perspective explains why workplace resources can facilitate performance. Third, leadership theory explains how supervisors can convert training and workplace resources into day-to-day guidance, feedback, coordination, and opportunity to perform. The partial-mediation results are consistent with a complementary mechanism: leadership carries part, but not all, of the association between organizational inputs and employee performance.

The findings also establish an important boundary for interpretation. The study was conducted in a workforce dominated by operational employees, with unequal training participation and a persistent performance gap. The results therefore support an integrated HR and leadership mechanism under these conditions, but they do not establish that the same coefficient structure will hold in managerial samples, larger hotels, or organizations with mature and evenly distributed development systems. This cautious interpretation is consistent with contemporary engagement and exchange research emphasizing that employees respond to the quality of organizational resources and support rather than to isolated HR practices [42].

5.3. Practical / Managerial Implications

Management should begin with a competency-gap matrix that links employee tenure, role requirements, performance shortfalls, and training history. Newer employees and positions with recurring performance gaps should receive priority rather than allocating training mainly by tenure. Each program should include a post-training application plan, with supervisors reviewing the use of new skills within two to four weeks.

Department heads should also treat the work environment as a coordination system rather than only a physical setting. Cross-shift handovers, peer support, access to information, and removal of operational barriers should be monitored alongside facilities. Leadership accountability can be made concrete through coaching frequency, feedback quality, fairness in training allocation, resolution of workplace barriers, and follow-through on employee-development commitments.

5.4. Limitations and Future Research

The study is limited by its cross-sectional single-site design, census of only 60 employees, and same-source questionnaire measurement. These conditions limit causal inference and external generalization and may increase common-method bias. The mediation analysis also relied on the Sobel test rather than bootstrap confidence intervals. Future research should use longitudinal or time-separated designs, supervisor or objective performance measures, and bootstrap estimates of indirect effects. Replication across different hotel categories and employee levels would help determine whether the leadership-mediated mechanism is stable across hospitality contexts.

6. CONCLUSION

Training, work environment, and leadership were positively associated with employee performance at Taman Nongsa Indah Village, Batam. Training and work environment also positively predicted perceived leadership effectiveness, and leadership partially mediated both relationships. The central contribution is therefore not that leadership replaces training or workplace resources, but that it appears to be one mechanism through which these organizational conditions are translated into employee performance.

For management, the results support more equitable training allocation, systematic post-training coaching, stronger workplace coordination, and clear leadership accountability for employee development. These conclusions should be interpreted within the study's cross-sectional, single-site, self-report design and confirmed in future research using multi-source data and bootstrap mediation analysis.

DECLARATIONS

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Author Contributions (CRediT)

Anninda Zahratin Nisa: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Writing - Original Draft. Azmen Kahar: Conceptualization, Supervision, Validation, Writing - Review & Editing.

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Data Availability
The data supporting the findings of this study are available from the corresponding author upon reasonable request. Access may be subject to participant confidentiality and organizational data-protection considerations.

Ethical Approval
Formal institutional ethical approval was not obtained for this minimal-risk, anonymous employee survey. The study followed established principles of voluntary participation, confidentiality, and responsible research conduct.

Informed Consent
Informed consent was obtained from all respondents before participation. Respondents were informed that participation was voluntary, that they could decline to participate, and that their responses would be used only for academic purposes.

Conflict of Interest
The authors declare no competing interests.

Artificial Intelligence (AI) Use Statement
During the revision and formatting of this manuscript, ChatGPT by OpenAI was used for language editing, structural organization, and template-formatting assistance. The authors are responsible for reviewing and verifying the accuracy, originality, integrity, confidentiality, and final content of the manuscript.

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