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Research Article

Training, Work Behavior, and Work Ability in Employee Productivity: The Role of Work Environment

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Abstract
This study examines the relationships among training, work behavior, work ability, and employee productivity, with the work environment serving as a mediator at PT. Titian Bahtera Indonesia. Using a quantitative explanatory design, primary data were collected through an online questionnaire distributed via Google Forms. Respondents were selected using purposive sampling based on their work experience and involvement in operational activities. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS. The findings indicate that training, work behavior, and work ability positively influence employee productivity. These factors also positively influence the work environment, which contributes to employee productivity. Regarding indirect relationships, the work environment significantly mediates the relationships between training and productivity and between work behavior and productivity. However, the work environment does not significantly mediate the relationship between work ability and productivity. This study contributes to the human resource management literature by integrating individual-related factors and workplace conditions into a single explanatory framework and showing that the work environment's indirect contribution varies across productivity determinants. Managerially, organizations should strengthen relevant training programs, encourage constructive work behavior, develop employee competencies, and maintain a supportive work environment to improve productivity.

Keywords: Training, Work Behavior, Work Ability, Employee Productivity, Work Environment

JEL Classification: M54, J24, J28

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1. Introduction

In the era of globalization and intense business competition, human resources have become a critical determinant of organizational success. Companies are required not only to manage physical and financial resources but also to optimize the quality of their workforce to maintain competitiveness.

Human resources encompass knowledge, skills, abilities, and attitudes that directly influence organizational performance. Effective human resource management practices, such as training, development, and performance management, are essential to ensure employees contribute optimally to organizational goals (Dessler, 2020; Armstrong & Taylor, 2017). Therefore, organizations must continuously invest in improving employee capabilities to adapt to dynamic business environments.

Employee productivity is one of the most important indicators in evaluating organizational performance. Productivity reflects the relationship between output produced and input used, indicating how efficiently are organization uses its resources (Wibowo, 2017). However, improving productivity remains a major challenge, especially in developing countries. According to the International Labor Organization (ILO), Indonesia's labor productivity still lags behind several Southeast Asian countries, indicating inefficiencies in workforce performance and utilization. This condition is also supported by the IMD World Competitiveness Yearbook, which reported a decline in Indonesia's global competitiveness ranking, particularly in aspects related to workforce efficiency and productivity (IMD, 2022). These issues highlight the urgency of identifying factors that influence employee productivity.

Several studies have identified training, work behavior, and work ability as key determinants of employee productivity. Training significantly enhances employees' knowledge and skills, enabling them to perform tasks more effectively (Khaliq et al., 2020). Work behavior, including discipline, responsibility, and initiative, helps create a productive work environment (Rahmawati et al., 2020). Meanwhile, work ability reflects an individual's capacity to complete tasks based on their competence, experience, and knowledge (Kurniawati & Mujanah, 2021). Although researchers have studied these variables extensively, their combined effect on productivity, especially through mediating variables, still requires further investigation.

The work environment is considered a crucial factor that can strengthen or weaken the relationship between employee competencies and productivity. A supportive work environment provides comfort, safety, and motivation, which in turn encourages employees to perform better (Sedarmayanti, 2021). Previous studies suggest that a positive work environment can enhance training effectiveness and improve employee behavior, ultimately leading to higher productivity (Zawadzki et al., 2020). However, the work environment's role as a mediator remains underexplored, particularly in specific organizational contexts.

Empirical phenomena in organizations indicate that despite the implementation of training programs and the presence of skilled employees, productivity levels are not always optimal. For instance, operational delays, inefficiencies, and poor coordination often result from inadequate skill implementation and ineffective communication among employees. These issues suggest that there are underlying factors beyond individual capabilities that influence productivity, such as the organizational environment and behavioral aspects. This gap between expected and actual productivity performance highlights the need for more comprehensive analysis.

Based on the literature and observed phenomena, a research gap remains in understanding how training, work behavior, and work ability interact to influence employee productivity, particularly when mediated by the work environment. Most previous studies examine these variables separately and do not consider the work environment's mediating role in a single integrated model. Therefore, this study aims to fill this gap by analyzing the direct and indirect relationships among these variables in a specific organizational setting.

The objectives of this study are to examine the effect of training, work behavior, and work ability on employee productivity and to analyze the mediating role of the work environment in these relationships. The findings are expected to contribute both theoretically and practically. Theoretically, this research enriches the human resource management literature by integrating multiple variables into a comprehensive model. Practically, it offers organizations insights for

designing effective strategies to improve employee productivity through training programs, behavioral development, and workplace improvements.

Although training, work behavior, and work ability are widely recognized as key determinants of employee productivity, their effects may depend not only on employees' individual attributes but also on the organizational conditions in which they are applied. This distinction is particularly relevant to PT. Titian Bahtera Indonesia, where employees must translate training, competence, and constructive work behavior into coordinated daily work outcomes. However, the available manuscript does not provide company-specific productivity indicators or documented operational records that would establish the magnitude of the organization's productivity problem; therefore, the organizational context should be interpreted as the setting for examining the proposed relationships rather than as evidence of a verified productivity decline. This study examines whether the work environment mediates the relationship between individual-related factors and productivity, rather than merely moderating their effects. Mediation is theoretically plausible because training and work behavior can shape communication, cooperation, and workplace support, which may then facilitate productive performance. By contrast, work ability may contribute directly to productivity through employees' knowledge and task competence without necessarily producing additional productivity benefits through changes in the work environment. This distinction is important because the indirect effects of training, work behavior, and work ability should not be assumed to be equivalent. Accordingly, this study examines the direct relationships of training, work behavior, and work ability with employee productivity, as well as the indirect relationships through the work environment at PT. Titian Bahtera Indonesia. Its contribution lies in assessing whether the proposed workplace mechanism operates consistently across these three factors, thereby providing a more differentiated explanation of employee productivity and a context-specific basis for human resource management decisions.

2. Literature Review and Hypothesis

Literature Review

Employee Productivity

Employee productivity is a fundamental human resource management concept that reflects employees' efficiency and effectiveness in performing their tasks. Productivity is generally defined as the ratio between output produced and input used in the production process (Wibowo, 2017). High productivity indicates that employees can utilize resources optimally, which contributes to organizational performance and competitiveness (Armstrong & Taylor, 2017). Productivity depends not only on technical skills but also on behavioral and environmental factors. According to Robbins and Judge (2017), employee productivity is closely related to motivation, work behavior, and organizational support systems. Organizations that can manage these aspects effectively tend to achieve better productivity outcomes. Therefore, understanding the determinants of productivity is crucial for organizations seeking to improve performance.

Training

Training is an essential component of human resource development that improves employees' knowledge, skills, and competencies. It is defined as a planned effort by organizations to facilitate employees' learning of job-related competencies (Noe, 2020). Effective training programs help employees perform tasks more efficiently and adapt to changes in the work environment (Dessler, 2020). In addition, training affects employee performance both directly and indirectly. Directly, it enhances technical capabilities, while indirectly it shapes employee attitudes and behaviors (Salas et al., 2012). Organizations that consistently implement training programs are more likely to build a competent workforce, ultimately increasing productivity.

Work Behavior

Work behavior refers to employees' actions, attitudes, and responses as they carry out their duties within the organization. It includes discipline, responsibility, cooperation, and initiative (Robbins & Judge, 2017). Positive work behavior contributes to a productive work environment and supports organizational goals (Luthans, 2011). Moreover, work behavior plays a significant role in shaping organizational culture. Employees who demonstrate positive behavior tend to create a harmonious

and collaborative workplace, which enhances overall performance (Rahmawati et al., 2020). Conversely, negative work behavior can disrupt workflow and reduce productivity, highlighting the importance of fostering constructive employee behavior.

Work Ability

Work ability is defined as an individual's capacity to perform tasks based on their knowledge, skills, and experience. It is a critical factor in determining employee performance and productivity (Kurniawati & Mujanah, 2021). Employees with higher work abilities are more capable of completing tasks accurately and efficiently, which contributes to organizational success (Spencer & Spencer, 1993). Work ability is influenced by several factors, including education, training, and work experience. Organizations must ensure employees have the competencies needed to meet job requirements (Mangkunegara, 2017). By improving work ability, companies can enhance employee performance and achieve higher productivity levels.

Work Environment

The work environment includes all physical, social, and psychological conditions that surround employees at work. It plays a crucial role in influencing employee satisfaction, motivation, and performance (Sedarmayanti, 2021). A supportive work environment can increase employee engagement and productivity, while an unfavorable environment can lead to stress and decreased performance (Davis & Newstrom, 2016). In recent studies, the work environment has also been identified as a mediating variable that connects employee-related factors to productivity outcomes. A conducive environment allows employees to apply their skills effectively, thus strengthening the impact of training, behavior, and ability on performance (Zawadzki et al., 2020). This highlights the importance of creating a positive work environment.

Hypothesis

The Effect of Training on Employee Productivity

Training plays a vital role in enhancing employee productivity by improving their knowledge, technical skills, and job-related competencies. Employees who receive adequate training are better equipped to perform their tasks efficiently, reduce errors, and adapt to changes in the work environment. According to Dessler (2020), training is a systematic process that enhances employee capabilities, which directly contributes to improved performance outcomes. In addition, training not only improves technical skills but also influences employees' attitudes and confidence levels, enabling them to work more effectively. Salas et al. (2012) emphasize that well-designed training programs can significantly improve individual and organizational performance. Empirical studies also support this argument, indicating that training has a positive and significant effect on employee productivity (Khaliq et al., 2020; Noe, 2020; Wibowo, 2017).

H1: Training positively affects employee productivity.

The Influence of Work Behavior on Employee Productivity

Work behavior reflects how employees perform their tasks and interact within the organization. Positive work behavior, such as discipline, responsibility, and initiative, contributes significantly to productivity improvement. Employees who exhibit constructive behavior tend to complete tasks more efficiently and maintain high-quality work standards (Robbins & Judge, 2017). Furthermore, Luthans (2011) states that employee behavior plays a key role in determining organizational performance. Positive behavior fosters collaboration and reduces workplace conflicts, which ultimately enhances productivity. Empirical studies have also shown that work behavior significantly influences employee productivity (Rahmawati et al., 2020; Mangkunegara, 2017; Wibowo, 2017).

H2: Work behavior positively affects employee productivity.

The Effect of Work Ability on Employee Productivity

Work ability is a key determinant of employee productivity. Employees with higher levels of ability are more capable of completing tasks efficiently, accurately, and within the required time frame. According to Spencer and Spencer (1993), competence is a key factor that differentiates high-performing employees from others. In addition, Kurniawati and Mujanah (2021) state that work

ability significantly affects employee performance because it reflects individuals' level of expertise and experience. Employees with strong abilities can handle complex tasks and contribute more effectively to organizational goals. Empirical evidence also supports the positive relationship between work ability and productivity (Mangkunegara, 2017; Robbins & Judge, 2017).
H3: Work ability positively affects employee productivity.

The Effect of Training on the Work Environment
Training can influence the work environment by improving communication, teamwork, and interpersonal relationships among employees. Employees who undergo training tend to develop better collaboration skills, which contribute to a more positive organizational climate (Noe, 2020). Moreover, training programs often include soft skills development, which enhances employees' ability to interact effectively with colleagues and supervisors. Zawadzki et al. (2020) found that training positively impacts the work environment by fostering cooperation and mutual understanding. Other studies also support this relationship (Salas et al., 2012; Dessler, 2020).
H4: Training positively affects the work environment.

The Influence of Work Behavior on the Work Environment
Work behavior significantly influences the quality of the work environment. Positive behaviors such as cooperation, respect, and responsibility create a harmonious and supportive workplace (Robbins & Judge, 2017). According to Luthans (2011), employee behavior shapes organizational culture, which directly affects the work environment. Empirical studies show that work behavior strongly and positively affects the work environment (Rahmawati et al., 2020; Sedarmayanti, 2021; Davis & Newstrom, 2016).
H5: Work behavior positively affects the work environment.

The Influence of Work Ability on the Work Environment
Employees with strong work abilities contribute positively to team performance and organizational climate. High-ability employees are more confident and better able to support their colleagues, creating a more productive and supportive work environment (Spencer & Spencer, 1993). In addition, Kurniawati and Mujanah (2021) highlight that competent employees can reduce work pressure and improve team efficiency. Previous studies also confirm that work ability positively affects the work environment (Robbins & Judge, 2017; Mangkunegara, 2017).
H6: Work ability positively affects the work environment.

The Influence of the Work Environment on Employee Productivity
The work environment is a critical factor that influences employee productivity. A supportive environment provides comfort, safety, and motivation, enabling employees to perform their tasks more effectively (Sedarmayanti, 2021). Davis and Newstrom (2016) argue that a positive work environment enhances employee satisfaction and engagement, which leads to improved productivity. Empirical studies also support the significant relationship between work environment and productivity (Zawadzki et al., 2020; Rahmawati et al., 2020; Wibowo, 2017).
H7:
The work environment positively affects employee productivity.

The Mediating Role of the Work Environment
The work environment mediates the relationship between training, work behavior, work ability, and employee productivity. A conducive environment allows employees to apply their knowledge and skills effectively, thus enhancing productivity outcomes (Zawadzki et al., 2020). Salas et al. (2012) emphasize that training outcomes are more effective when a positive work environment supports them. Similarly, employee behavior and ability can produce optimal results when the organizational environment facilitates their application (Robbins & Judge, 2017; Sedarmayanti, 2021).
H8: Work environment mediates the relationship between training and employee productivity.
H9: Work environment mediates the relationship between work behavior and employee productivity.

H10: Work environment mediates the relationship between work ability and employee productivity.

3. Data and Method

Research Design

This study used a quantitative, explanatory research design to examine the relationships among training, work behavior, work ability, the work environment, and employee productivity at PT. Titian Bahtera Indonesia. A quantitative approach was appropriate because the study aimed to measure the research variables and test the proposed hypotheses using statistical analysis (Creswell, 2014). The explanatory design was used to examine the direct relationships among the variables and the indirect relationships through the work environment as a mediating variable. Structural Equation Modeling using the Partial Least Squares approach (SEM-PLS) was selected because it enables the simultaneous assessment of the measurement model and the structural relationships among multiple constructs, including mediation pathways (Hair et al., 2019).

Population and Sampling Technique

The population consisted of all employees of PT. Titian Bahtera Indonesia. Employees were considered relevant respondents because they were directly involved in organizational activities associated with the variables examined in this study. The study used purposive sampling, a non-probability technique in which respondents are selected based on criteria relevant to the research objectives (Sekaran & Bougie, 2016). The research design specified eligibility criteria for employees who had worked for a certain period and were actively involved in operational activities. These criteria were intended to ensure that respondents had sufficient work experience and familiarity with the organization's working conditions and productivity-related activities. Purposive sampling was considered appropriate because the study required responses from employees with relevant knowledge and experience (Hair et al., 2019). The manuscript identifies the target population and sampling technique. However, it does not report the total population size, the number of questionnaires distributed, the number of responses received, or the final number of valid respondents. Therefore, these figures and the response rate cannot be established from the information currently provided in the manuscript.

Data Type and Data Collection

This study used primary data collected directly from employees through a structured questionnaire distributed online using Google Forms. Primary data were appropriate because the research required employees' assessments of the variables under investigation (Sekaran & Bougie, 2016). Online distribution facilitated questionnaire administration and response collection from eligible employees. The questionnaire employed a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). This scale allowed respondents to express their agreement with statements related to the research variables and enabled quantitative analysis of their responses (Sugiyono, 2019). The questionnaire covered five constructs: training, work behavior, work ability, work environment, and employee productivity.

Training represented the training-related factor examined in relation to employees' productivity and work environment. Work behavior represented employees' work-related behavior, while work ability concerned employees' ability to perform their assigned tasks. The work environment was specified as the intervening construct through which training, work behavior, and work ability could be indirectly associated with employee productivity. Employee productivity was the main outcome variable. The specific indicators and questionnaire items used to measure each construct should be reported according to the actual research instrument. The available manuscript does not identify the sources of the questionnaire items for each construct or explain whether the items were adopted or adapted from previous studies. Accordingly, the measurement sources and item-level operational definitions require confirmation from the questionnaire used in the data collection.

Data Analysis Method

The data were analyzed using Structural Equation Modeling with the Partial Least Squares approach (SEM-PLS), following Hair et al. (2019). The analysis was conducted using SmartPLS (version 4.1.1.4), as reported in the manuscript. SEM-PLS was used to evaluate the measurement model (outer model) and the structural model (inner model), allowing the study to assess the quality of the construct measures and test the hypothesized relationships among the research variables. The measurement model was evaluated for convergent validity, discriminant validity, composite reliability, and Cronbach's alpha. Convergent validity was assessed by examining indicator factor loadings, with values above 0.70 used as the criterion specified in the manuscript. We used composite reliability values above 0.70 to indicate acceptable construct reliability (Hair et al., 2019). The measurement-model assessment included discriminant validity to determine whether the constructs were empirically distinguishable. The manuscript should report the actual validity and reliability results to demonstrate whether the measurement criteria were satisfied.

The structural model examined the hypothesized relationships among training, work behavior, work ability, the work environment, and employee productivity. The direct relationships were evaluated to determine whether the three explanatory variables were associated with employee productivity and the work environment, and whether the work environment was associated with employee productivity. The model also examined the indirect relationships between training and productivity, work behavior and productivity, and work ability and productivity through the work environment.

The coefficient of determination (R^2) was used to assess the explanatory power of the endogenous constructs. The manuscript cites Musyaffi et al. (2022) to interpret R^2 values, describing 0.67, 0.33, and 0.19 as strong, moderate, and weak, respectively. Hypothesis testing was based on the estimated structural relationships and the study's reported significance results. The indirect effects were assessed separately to determine whether the work environment mediated each relationship. A mediation relationship was considered statistically supported only when the corresponding indirect effect met the study's significance criterion. The manuscript does not specify the bootstrapping settings used to assess statistical significance, including the number of resamples, confidence-interval method, confidence level, or one-tailed versus two-tailed testing. These settings should be verified from the original SmartPLS analysis output before the method is finalized.

Common-Method Bias and Research Ethics

Because the study collected primary data through a questionnaire, potential common-method bias should be considered when interpreting the results. However, the current manuscript reports no procedural or statistical assessment to evaluate this potential bias. Therefore, no common-method bias test or result can be reported based on the available information.

Similarly, the manuscript does not describe the procedures used to obtain informed consent, protect respondent confidentiality, store the collected data, or secure ethical approval. These details should be reported only for the procedures actually implemented during the study. The absence of these details in the current manuscript should not be interpreted as evidence that the procedures were either conducted or omitted.

Finally, the study's cross-sectional questionnaire design allows the proposed direct and indirect statistical relationships to be examined within the specified model, but it does not establish temporal precedence among the variables. Consequently, the mediation findings should be interpreted as evidence of statistically significant indirect relationships rather than definitive proof of causal mechanisms. Future research could use longitudinal or time-separated data to examine whether changes in training, work behavior, or work ability precede changes in the work environment and subsequent employee productivity.

4. Results

Coefficient of Determination (R^2)

According to Musyaffi (2022), the criteria for determining the strength of the R-square value are as follows: 0.67 indicates a strong relationship, 0.33 indicates a moderate relationship, and 0.19 indicates a weak relationship. The results of the R-square test are as follows:

Table 1. Test Results (R^2)

Variables	R-square
Employee Productivity	0.914
Work Environment	0.675

Source: Data processed by the researcher, 2025

Based on the data above, the R-square value for the Employee Productivity variable is 0.914. This means the independent variables in this study explain 91.4% of the variation in employee productivity, while the remaining 8.6% is influenced by factors outside the research model. Meanwhile, the R-square value for the Work Environment variable is 0.675, meaning that 67.5% of the variation in the work environment can be explained by the independent variables that influence it.

Goodness of Fit (Model Fit)

The PLS model is considered to meet the criteria if the SRMR value is less than 0.10 and is considered to have perfect fit if the SRMR value is less than 0.08 (Musyaffi, 2022).

Table 2. Goodness of Fit

	Saturated model	Estimated model
SRMR	0.041	0.041

Source: Data processed by researcher, 2025

Based on the test results in Table 2, the Standardized Root Mean Square Residual (SRMR) for both the saturated and estimated models was 0.041. This value is below the 0.08 threshold commonly used as a model suitability criterion, indicating that the model fits well. Therefore, this research model meets the goodness-of-fit criterion, indicating that the difference between the predicted and actual covariance matrices is very small.

Path Coefficients

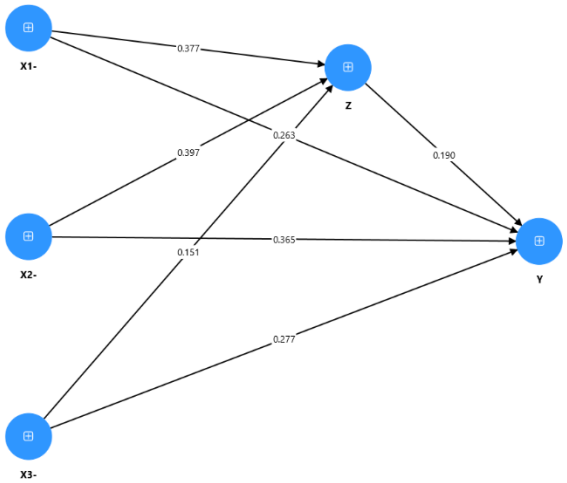


Figure 1. Data Path Coefficients Results

Hypothesis Testing

In hypothesis testing, a hypothesis is accepted if the t-statistic exceeds 1.96 and the p-value is below 0.05, which is considered to meet the established criteria. Therefore, if the t-statistic is greater than 1.96 and the p-value is less than 0.05, the hypothesis is accepted (Garson, 2016, p. 97). Hypothesis testing was conducted using data processing in SmartPLS version 4.1.0.9 bootstrapping, as shown below:

Table 3. T-Statistic and P-Value Results

Influence	Original sample (O)	T statistics (|O/STDEV|)	P values	Description
Training -> Employee Productivity	0.263	5.106	0.000	Received
Work Behavior -> Employee Productivity	0.365	6.963	0.000	Received
Work Ability -> Employee Productivity	0.277	5.662	0.000	Received
Training -> Work Environment	0.377	4.605	0.000	Received
Work Behavior -> Work Environment	0.397	5.062	0.000	Received
Work Ability -> Work Environment	0.151	2.053	0.040	Received
Work Environment -> Employee Productivity	0.190	4.528	0.000	Received
Training -> Work Environment -> Employee Productivity	0.072	3.031	0.002	Received
Work Behavior -> Work Environment -> Employee Productivity	0.075	3.443	0.001	Received
Work Ability -> Work Environment -> Employee Productivity	0.029	1.936	0.053	Rejected

Source: Data processed by researcher, 2025

5. Discussion

Effect of Training on Employee Productivity

The findings indicate that training is positively associated with employee productivity at PT. Titian Bahtera Indonesia. This relationship can be explained by training's role in improving job-related knowledge, task skills, and employees' understanding of work procedures. When training content aligns with operational requirements, employees may be better equipped to complete tasks accurately, reduce avoidable errors, and use their time more efficiently. Training may also improve employees' confidence in applying appropriate procedures. These interpretations are consistent with human resource management perspectives that identify training as an important instrument for improving employee capabilities (Dessler, 2020; Khaliq et al., 2020; Salas et al., 2012).

This result also aligns with international evidence that the relationship between training and organizational outcomes depends on the nature of the training and its context. In a meta-analysis of primary studies, Garavan et al. (2021) reported a positive relationship between training and organizational performance and highlighted the relevance of temporal, institutional, and organizational conditions. Similarly, Balwant et al. (2022) found that the training and development climate was associated with administrative employees' productivity through mechanisms including supervisor support, motivation to learn, and employee engagement. These studies suggest that training should not be understood merely as an activity delivered to employees; its contribution depends on whether the organization enables employees to apply what they learn. In the present study, the positive direct relationship suggests that training is associated with productivity. At the same time, the mediation result discussed below provides additional evidence that the work environment may be one pathway through which training is linked to productivity.

Effect of Work Behavior on Employee Productivity

The positive relationship between work behavior and employee productivity suggests that how employees conduct their daily tasks matters alongside what they know or are capable of doing. Constructive work behavior, including discipline, responsibility, and initiative where reflected in

the study's measures, may support consistent task completion, coordination, and compliance with work procedures. In operational settings, these behaviors can reduce avoidable interruptions and help employees coordinate their contributions with colleagues. This interpretation is consistent with organizational behavior perspectives that emphasize the role of employee conduct in shaping work outcomes (Robbins & Judge, 2017; Luthans, 2011) and with previous findings cited in the manuscript (Rahmawati et al., 2020; Mangkunegara, 2017; Wibowo, 2017).

The results also help explain how work behavior may shape the workplace conditions employees experience. Cooperative and responsible behavior can support interpersonal trust, clearer communication, and smoother coordination. However, these outcomes should not be interpreted as evidence that employee behavior alone determines the quality of the work environment: supervisory practices, organizational procedures, and available resources may also influence workplace interactions. The positive relationship observed in this study is therefore best understood as evidence that employee behavior is an important component of productivity and workplace dynamics, rather than as proof that all organizational barriers can be resolved through behavioral interventions alone.

Effect of Work Ability on Employee Productivity

Work ability is positively associated with employee productivity, indicating that employees' knowledge, skills, experience, and task-related competence are important for performing their responsibilities effectively. Employees with appropriate abilities may understand task requirements more clearly, solve work-related problems, and complete activities with fewer errors. This interpretation aligns with the competency perspective discussed by Spencer and Spencer (1993) and the earlier literature cited in the manuscript (Kurniawati & Mujanah, 2021; Mangkunegara, 2017; Robbins & Judge, 2017).

Nevertheless, the positive direct relationship between work ability and productivity must be distinguished from the unsupported indirect relationship through the work environment. The results do not indicate that ability is unimportant; rather, they suggest that its relationship with productivity does not necessarily operate through the proposed mediating pathway. Competent employees may use their knowledge and skills directly to perform their assigned tasks, even when their competence does not translate into a measurable indirect effect through perceptions of the work environment. In other words, task capability and the organizational conditions that shape the workplace are related but conceptually distinct. This distinction is important for human resource management because competency development may be needed to improve task execution, while improvements to the work environment may require separate organizational interventions.

Effect of Training on the Work Environment

The findings indicate that training is positively associated with the work environment. One plausible explanation is that training may support not only technical performance but also the communication and coordination practices through which employees interact. When training includes relevant interpersonal or collaborative content, employees may become more familiar with shared procedures, role expectations, and ways of resolving work-related problems. This interpretation is consistent with the manuscript's theoretical discussion of training and interpersonal relationships (Noe, 2020; Zawadzki et al., 2020) and the broader training literature (Salas et al., 2012; Dessler, 2020).

However, the finding should not be taken to mean that training automatically improves every dimension of the work environment. The relationship depends on the training content and how well employees can apply what they learn. Training focused exclusively on technical tasks may improve individual competence without materially changing interpersonal relationships or physical working conditions. This qualification is consistent with Garavan et al. (2021), whose meta-analysis emphasizes that the relationship between training and organizational performance varies with contextual and temporal considerations. For PT. Titian Bahtera Indonesia, training initiatives may therefore be most useful when they are linked to operational needs and reinforced through opportunities to practice, feedback, and coordination at work.

Effect of Work Behavior on the Work Environment
The positive relationship between work behavior and the work environment suggests that workplace conditions are partly associated with how employees interact and conduct their responsibilities. Discipline and responsibility may help establish predictable work routines, while cooperation and respect can facilitate communication and reduce interpersonal friction. These behaviors may foster a more supportive social environment. This interpretation aligns with the organizational behavior literature cited in the manuscript (Robbins & Judge, 2017; Luthans, 2011) and prior studies discussed by the authors (Rahmawati et al., 2020; Sedarmayanti, 2021; Davis & Newstrom, 2016).

At the same time, the relationship should be interpreted as reciprocal in a broader organizational sense, even though the present cross-sectional model estimates a specified direction. Employees' behavior may shape day-to-day workplace interactions, but the environment can also influence the behaviors employees can or are willing to demonstrate. Managers should therefore avoid treating an unfavorable workplace solely as an employee behavior problem. Clear procedures, fair supervision, appropriate facilities, and effective communication may be necessary to support the constructive behaviors that the organization seeks to encourage.

Effect of Work Ability on the Work Environment
The positive relationship between work ability and the work environment suggests that employees' competencies may be associated with how effectively work is carried out and coordinated. Employees who understand their responsibilities and have relevant skills may contribute more effectively to team tasks, support colleagues, and manage routine work demands. Such contributions may support workplace cooperation and reduce some task-related difficulties. This interpretation is consistent with the competency-related arguments in the original manuscript (Spencer & Spencer, 1993; Kurniawati & Mujanah, 2021; Robbins & Judge, 2017; Mangkunegara, 2017).

However, this direct relationship does not imply that work ability must also have a significant indirect effect on productivity through the work environment. A factor can be associated with the mediator and with the outcome separately without producing a statistically significant indirect effect across the complete pathway. In this study, the indirect effect depends on the combined estimated paths from work ability to the work environment and from the work environment to productivity. The nonsignificant indirect result indicates insufficient evidence to conclude that the work environment transmits the relationship between work ability and productivity. Accordingly, the direct association between ability and the work environment should not be used to claim that the work environment mediates the ability–productivity relationship.

Effect of the Work Environment on Employee Productivity
The positive relationship between the work environment and employee productivity indicates that workplace conditions are relevant to employees' ability to carry out their tasks. A supportive environment may help employees concentrate, coordinate their activities, and access the conditions needed to complete work effectively. Physical conditions may matter for comfort and task execution, while psychosocial conditions such as communication and support may influence coordination and employees' willingness to contribute. This interpretation is consistent with the original manuscript's discussion of workplace conditions and employee outcomes (Sedarmayanti, 2021; Davis & Newstrom, 2016; Rahmawati et al., 2020; Wibowo, 2017).

International evidence provides a useful comparison. Zhenjing et al. (2022), in a study published in Frontiers in Public Health, found that workplace environment was associated with employee performance and examined employee commitment and achievement-striving ability as mediating mechanisms. Their findings reinforce the view that workplace conditions are not merely background features but may be connected to employees' capacity and motivation to perform. However, their proposed mediators differ from the work environment's role in the present study, so the findings should be compared at the broader organizational-mechanism level rather than

treated as identical tests. Taken together, the evidence supports managerial attention to the physical and social work environment while recognizing that the most effective interventions depend on the particular conditions employees experience.

The Mediating Role of the Work Environment

The mediation results provide a more differentiated picture than the general claim that the work environment mediates every relationship between individual factors and productivity. The indirect relationship between training and productivity through the work environment is statistically significant, as is the indirect relationship between work behavior and productivity through the work environment. In contrast, the indirect relationship between work ability and productivity through the work environment is not statistically significant. Therefore, the findings support mediation for training and work behavior but not for work ability. The results must not be generalized into a claim that all three indirect pathways are significant.

The significant training pathway suggests that training may be associated with productivity partly through workplace conditions that help employees apply acquired knowledge and skills. Training may increase employees' readiness to perform tasks, while a supportive environment may provide the communication, coordination, and practical support required to translate that readiness into productive work. This interpretation is consistent with Salas et al. (2012), who emphasize the importance of training design and the conditions under which training is transferred to the workplace. It also aligns with Balwant et al. (2022), who found that training and development climate was linked to productivity through supervisor support, motivation to learn, and engagement. Although the mediators differ across studies, both provide a basis for understanding why training-related benefits may depend partly on organizational conditions rather than on training exposure alone.

6. Conclusion

This study examines the relationships between training, work behavior, work ability, the work environment, and employee productivity at PT. Titian Bahtera Indonesia. The findings indicate that training, work behavior, and work ability contribute to employee productivity through direct relationships, with work behavior showing the strongest direct productivity coefficient. Training has the strongest coefficient among the antecedents associated with the work environment. The mediation analysis further shows that the work environment significantly mediates the relationships between training and productivity and between work behavior and productivity. However, the indirect effect of work ability on productivity through the work environment is not statistically significant. These findings offer a more nuanced theoretical understanding of the work environment as a potential explanatory mechanism, rather than a universal mediator for all individual-related factors.

Practically, the findings suggest that PT. Titian Bahtera Indonesia should prioritize behavioral improvement initiatives to directly strengthen productivity, while using structured training and supportive workplace conditions to reinforce the work environment. Capability development remains relevant, but the current evidence does not support assuming an indirect productivity contribution through the work environment. The study adds a context-specific perspective by distinguishing individual factors' direct productivity contribution from the indirect pathways supported by the analysis. Nevertheless, the findings should be interpreted cautiously because the research relies on cross-sectional, self-reported data from a single company. The design cannot establish temporal ordering or rule out reverse causality, omitted variables, and potential overlap between constructs. Accordingly, the results indicate statistical relationships within the studied context rather than definitive causal mechanisms that can be generalized to other organizations.

Recommendation

PT. Titian Bahtera Indonesia should prioritize behavioral coaching, with supervisors setting observable performance standards and reviewing progress quarterly. Human resource managers should conduct competency assessments to identify training needs and evaluate training outcomes against baseline productivity indicators. HR managers should also administer quarterly work-

environment surveys covering communication, cooperation, and workplace support, with improvement targets assigned to responsible unit managers. A productivity dashboard should track output, task completion, quality, and relevant operational indicators before and after interventions. Management should review these measures quarterly and revise initiatives when targets are unmet. Evaluation should combine objective performance records and supervisor assessments, not employee perceptions alone.

Limitations and avenues for future research

This study is limited by its single-company setting, cross-sectional design, and reliance on self-reported data. Omitted-variable bias, reverse causality, and potential construct overlap may affect the estimated relationships, while the proposed mediation direction cannot establish temporal mechanisms. Future research should employ longitudinal surveys, supervisor-rated productivity, multisite comparisons, and multilevel models. Researchers should also compare mediation with environmental moderation models to assess whether workplace conditions transmit or instead alter the relationships between individual factors and productivity.

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