Analysis of the Effect of Human Resource Development on Employee Performance with Job Satisfaction as an Intervening Variable at PT Pelindo Multi Terminal

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Abstract

This study aims to analyze the influence of human resource (HR) development on employee performance, both directly and through job satisfaction as a mediating variable. The results show that HR development has a positive and significant effect on employee performance, with an original sample value of 0.387 and P values of 0.001 < 0.05. In addition, HR development is also proven to have a positive effect on job satisfaction (O = 0.377; P = 0.001), which in turn affects employee performance. Job satisfaction has a significant effect on employee performance with an original sample value of 0.672 and P values of 0.000. The influence of HR development on employee performance also occurs through job satisfaction, with an original sample value of 0.253 and P values of 0.004, indicating that job satisfaction plays an important role as a mediating variable. These findings suggest that organizations need to focus more on HR development that can improve employee competence and job satisfaction, which ultimately contributes to improving overall employee performance. This study provides insights for organizations to design more effective and sustainable HR development strategies in order to improve employee performance.

Keywords: *Human Resource Development, Employee Performance, Job Satisfaction*

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2nd International Conference on Islamic Community Studies (ICICS)
Theme: History of Malay Civilisation and Islamic Human Capacity and Halal Hub in the Globalization Era
https://proceeding.pancabudi.ac.id/index.php/ICIE/index

Introduction

PT Pelindo Multi Terminal, as one of the spearheads of national logistics services, plays a vital role in supporting the distribution of goods through ports. The increasing volume of goods and commodities, which continues to grow annually, requires companies to optimize the performance of their human resources to ensure effective and efficient operations. Data from the Central Statistics Agency (2024) shows that the national logistics sector experiences growth of around 6% per year, which requires rapid adaptation and improved employee performance to meet the challenges of increasingly fierce competition. Therefore, human resource development is a strategic aspect that cannot be ignored to support the company's sustainability and competitiveness in this dynamic market.

However, the real challenge is ensuring that human resource development truly has a positive impact on overall employee performance. Many organizations, including PT Pelindo Multi Terminal, still face challenges in maintaining employee job satisfaction amidst the pressure of high operational targets and the tiring dynamics of shift work. Low job satisfaction often contributes to decreased motivation and productivity, which can ultimately hinder the achievement of company goals. Although human resource development has become a routine program, a lack of understanding of the relationship between human resource development, job satisfaction, and employee performance remains a barrier to optimizing the desired results. Several contemporary studies conducted in the past five years have reinforced the importance of job satisfaction as an intervening variable in the relationship between human resource development and performance. For example, (Anggraeni et al., 2024) revealed that competency and career development significantly improve employee performance through increased job satisfaction. Another study by (Sri et al., 2024) confirmed that job satisfaction built from competency and career development also strengthens organizational commitment, leading to improved performance. Meanwhile, a study by (Ependi, 2024) in the healthcare sector showed that work motivation, which is closely related to job satisfaction, mediates the impact of human resource development on employee performance. However, most of this research was conducted in the public service and banking sectors, so there is still an opportunity to reexamine this phenomenon in the port sector, which has its own unique work characteristics and challenges.

This gap is a crucial reason for this study to delve deeper into the relationship between human resource development, job satisfaction, and employee performance in the context of PT Pelindo Multi Terminal. Previous research has not specifically investigated the intervening variables of job satisfaction in the port industry, which has its own complexities in HR management and operations. By using a quantitative approach, this study aims to provide a more relevant and contextual empirical picture, while also enriching the human resource management literature, particularly in the logistics and port sectors. The results of this study are expected to provide a foundation for developing more effective and evidence-based HR policies.

The main objective of this study is to analyze the influence of human resource development on employee performance with job satisfaction as an intervening variable at PT Pelindo Multi Terminal. Theoretically, this study contributes to strengthening the concept of the relationship mechanism between these variables in a work environment that demands operational speed and accuracy. Practically, the results of the study are expected to serve as a reference for management in designing HR development strategies that not only improve competency but also employee job satisfaction, thus having an overall positive impact on improving organizational performance and the operational success of the terminal.

Literature review Human Resource Development

Human Resource Development (HRD) according to (Kareem, 2019) is a practice and policy that aims to improve employee competency and capabilities through various interventions such as training, career development, and organizational development, which ultimately increases

organizational effectiveness. HRD development is an effort to improve employee knowledge, skills, and abilities in order to support individual and organizational performance. The following are Human Resource Development indicators according to (Kareem, 2019) as follows: Talent Development, Training and Development, Organizational Development, Career Development.

Job satisfaction

Job satisfaction is a feeling that a person feels about himself and his work. This shows that job satisfaction is an emotion that supports or disapproves of his work and the conditions he feels According to (Indrasari, 2017). Job satisfaction is an employee's pleasant or unpleasant income regarding his work, this feeling is seen from the employee's good behavior towards work and all things experienced in the work environment According to (Handoko, 2020). Meanwhile, the definition of job satisfaction According to (Priansa, 2018) says that job satisfaction is a collection of feelings, beliefs, and thoughts about how a person responds to his work. Aspects of measuring job satisfaction can be known According to (Priansa, 2018) through: Salary, Promotion, Supervision, Coworkers, and the Work Itself

Employee Performance

Performance according to (Mangkunegara, 2022) states that "the work results in terms of quality and quantity achieved by an employee in carrying out his duties in accordance with the responsibilities given to him". Performance is a term derived from the word job performance which is defined as the work results in quality and quantity achieved by an employee in carrying out his duties per unit of time period in accordance with the responsibilities given to him. (Kasmir, 2018) states that performance is the work results and behavior that have been achieved in completing the tasks and responsibilities given in a certain period. (Kasmir, 2018) states that there are several indicators that can be used to measure employee performance, namely: work quality, work quantity, time period and work effectiveness

Conceptual Framework

A conceptual framework is a synthesis of the relationships between variables compiled from various theories that have been described (Sugiyono, 2022). The conceptual framework aims to provide a general overview of the research object within the framework of the variables to be studied. The conceptual framework to be examined in this study is Human Resource Development as variable X, Job Satisfaction as variable Z, and Employee Performance as variable Y.

Figure 1. Conceptual Framework **Hypothesis**

H1. Human resource development has a positive and significant impact on performance at PT Pelindo Multi Terminal

H2. Human resource development has a positive and significant effect on job satisfaction at PT Pelindo Multi Terminal.
H3. Job satisfaction has a positive and significant effect on performance at PT Pelindo Multi Terminal
H4. Human resource development has a positive and significant effect on performance through job satisfaction as an intervening variable at PT Pelindo Multi Terminal.

Research methodology

This research approach, based on the data generated, is quantitative. Based on its level of explanation, this research is associative. This makes this research approach use an associativequantitative approach. (Manullang & Pakpahan, 2021) explain that associative research or causal research (cause-and-effect relationships) is research that aims to determine whether a variable acting as an independent variable influences another variable acting as a dependent variable. (Manullang & Pakpahan, 2021) also explain that quantitative research is research that uses numerical data. Based on this definition, associative-quantitative research in this study is research that examines the influence of independent variables on dependent variables using numerical data.

This research was conducted at PT Pelindo Multi Terminal Address: Jalan Lingkar Pelabuhan No.1, Belawan II, Medan Kota Belawan, Medan City, North Sumatra 20411. The population in this study were all employees who worked in two directorates at PT Pelindo Multi Terminal, namely the Operations Directorate with 19 employees and the Engineering Directorate with 27 employees, so the total was 46 employees. Considering that the population at PT Pelindo Multi Terminal was only 46 employees, the sample used was a saturated sample where the entire population, namely 46 employees, both permanent and non-permanent employees, were all used as research samples. The sampling technique used in this study was census sampling or saturated sampling, namely taking the entire population as a sample.

Results Outer Model Analysis

The relationship between latent variables and the indicators that make them up (manifest variables) is ascertained through measurement model testing (outer model). Ensuring that each signal accurately and consistently represents the construct is the primary goal of this testing. Convergent validity, discriminant validity, and concept reliability are the three primary components of the testing procedure. While discriminant validity guarantees that each concept is distinct from other constructs, convergent validity is used to evaluate the degree to which indicators within a variable have a high degree of association. In the meantime, reliability testing is carried out to assess each indicator's internal consistency in measuring the same construct, guaranteeing that the analysis results are trustworthy and have strong validity in the study model.

Convergent Validity

The degree to which each indicator may reliably reflect the construct it measures is evaluated using convergent validity in a measurement model with reflective indicators. The correlation between the latent construct score and the indicator score reveals this value. An indicator is generally regarded as dependable if its loading factor value is greater than 0.70, which indicates that it significantly contributes to the construct it depicts. However, loading levels between 0.50 and 0.60 were still acceptable in the early stages of instrument development since they were thought to accurately represent the measured variable. Since every indicator in this study had loading values above 0.70 and were significant based on the outer loading data, it can be said that every indicator satisfies the conditions for convergent validity. Additionally, Figure 1 shows the structural model (inner model) that explains the connections between the latent variables in this study :

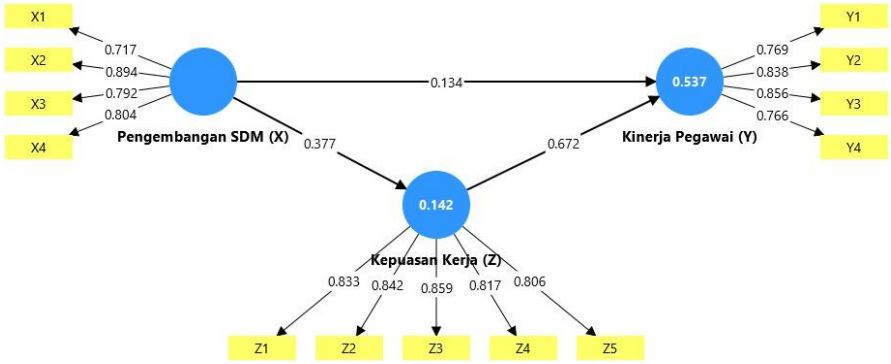

Figure 2. Outer Model
Source: SmartPLS 4.1.1.2 data processing, 2026

The following table displays the results of the Smart PLS output for loading factors: External Loadings

Table 1. Outer Loadings

	Job Satisfaction (Z)	***Employee Performance (Y)***	***Human Resources Development (X)***
X1			*0.717*
X2			*0.894*
X3			*0.792*
X4			*0.804*
Y1		*0.769*	
Y2		*0.838*	
Y3		*0.856*	
Y4		*0.766*	
Z1	*0.833*		
Z2	*0.842*		
Z3	*0.859*		
Z4	*0.817*		
Z5	*0.806*		

Source: Smart PLS 4.1.1.2, 2026

There are currently 13 indicators since, as Table 1 demonstrates, the assessment yielded a loading factor result of >0.07, indicating that all indicators are legitimate. Additional study can be carried out if the loading factor is valid. This implies that every indication is reliable for measuring the construct.

Discriminant Validity

The results of the discriminant validity test, which uses the cross-loading value—that is, the correlation between the indicator and each latent construct in the model—to make sure that each indicator only measures the construct it is intended to measure and does not have a high correlation with other constructs, are presented in this section. An indicator is deemed to meet the discriminant validity criteria if the cross-loading value for the original construct is higher than the cross-loading value for other constructs. All of the indicators in this study have the maximum cross-loading value for the construct they measure, according to the analysis results. This suggests that all of the indicators have satisfied the requirements for discriminant validity and can distinguish each variable with clarity :

Table 2. Cross Loading

	Job Satisfaction (Z)	***Employee Performance (Y)***	***Human Resources Development (X)***
X1	*0.233*	*0.379*	***0.717***
X2	*0.326*	*0.328*	***0.894***
X3	*0.355*	*0.323*	***0.792***
X4	*0.284*	*0.178*	***0.804***
Y1	*0.592*	***0.769***	*0.339*
Y2	*0.614*	***0.838***	*0.382*
Y3	*0.644*	***0.856***	*0.168*
Y4	*0.464*	***0.766***	*0.378*
Z1	***0.833***	*0.652*	*0.384*
Z2	***0.842***	*0.594*	*0.310*
Z3	***0.859***	*0.696*	*0.262*
Z4	***0.817***	*0.499*	*0.348*
Z5	***0.806***	*0.532*	*0.258*

Source: Smart PLS 4.1.1.2, 2026

Table 2 demonstrates that, in comparison to other constructions, each indicator has the largest cross-loading value on the construct to which it belongs. This is true for every sign in the variables of job satisfaction, employee performance, and human resource development. Because each indicator is able to accurately represent its corresponding constructs, it may be argued that all indicators have satisfied the requirements for discriminant validity.

Composite reliability

The construct's dependability is then assessed using Composite dependability and Cronbach's Alpha scores. If a construct's composite reliability value is greater than 0.60 and its Cronbach's Alpha value is greater than 0.70, it is deemed dependable. It may be inferred that all indicators have strong consistency and stability in measuring the research variables since the analysis results utilizing SmartPLS demonstrate that all constructs have reliability values that satisfy these requirements :

Table 3. Construct Reliability and Validity

	Cronbach's alpha	*Composite reliability (rho_a)*	*Composite reliability (rho_c)*	*Average variance extracted (AVE)*
Job Satisfaction (Z)	*0.889*	*0.895*	*0.918*	*0.692*
Employee Performance (Y)	*0.823*	*0.829*	*0.883*	*0.653*
Human Resources Development (X)	*0.816*	*0.824*	*0.879*	*0.647*

Source: Smart PLS 4.1.1.2, 2026

The Average Variance Extracted (AVE) values for Job Satisfaction (0.692), Employee Performance (0.653), and Human Resource Development (0.647) are all higher than the minimum value of 0.50, as Table 3 demonstrates. It may be concluded that all variables have satisfied the convergent validity requirements since this shows that each construct has a strong capacity to explain the variation of its indicators. Additionally, each variable has very strong and consistent composite reliability because the composite reliability (rho_c) values for Job Satisfaction (0.918), Employee Performance (0.883), and Human Resource Development (0.879) all above the minimum criterion of 0.70. It is also possible to conclude that the complete study instrument has excellent internal reliability because the Cronbach's Alpha values for the variables Job Satisfaction (0.889), Employee Performance (0.823), and Human Resource Development (0.816) have all exceeded the minimum limit of 0.70. In order to build the constructs of job satisfaction, employee performance, and human resource development, the indicators employed in this study are deemed legitimate and reliable.

Fornell-Larcker Criterion

Each construct in the SEM-PLS model must measure a unique notion, have good discriminant validity, and not overlap, according to the Fornell-Larcker Criterion. This is essential to guaranteeing the study model's theoretical and empirical validity.

Table 4. Fornell-Larcker Criterion Test

	Job Satisfaction (Z)	*Employee Performance (Y)*	*Human Resources Development (X)*
Job Satisfaction (Z)	*0.832*		
Employee Performance (Y)	*0.722*	*0.808*	
Human Resources Development (X)	*0.377*	*0.387*	*0.804*

Source: Smart PLS 4.1.1.2, 2026

The diagonal value (bold) indicates the root of the Average Variance Extracted (AVE) in the table, which is higher than the correlation values between other variables in the same row or column, according to the correlation results between latent variables. According to the FornellLarcker criterion, this shows that each construct has strong discriminant validity.

Inner Model Analysis

The Inner Model seeks to test hypotheses based on the significance of the values acquired and investigate the impact of direct and indirect links between the variables employed. Several indicators show the steps of analysis used to assess the structural model, including :

Coefficient of Determination (R2)

The R Square value is obtained as follows based on the data processing performed using the SmartPLS 4.1.1.2 application :

Table 5. R Square Results

	R-square	*Adjusted Rsquare*
Job Satisfaction (Z)	*0.142*	*0.130*
Employee Performance (Y)	*0.537*	*0.523*

Source: Smart PLS 4.1.1.2, 2026

Table 5 above reveals that the R-Square value for the Employee Performance (Y) variable is 0.537. This figure indicates that the independent variables in the model—job satisfaction and human resource development—account for 53.7% of the variation in employee performance. In the meantime, variables not included in this research model account for the remaining 46.3%. Additionally, the R-Square value for the Job Satisfaction (Z) variable is 0.142, indicating that the Human Resource Development variable accounts for 14.2% of the variation in Job Satisfaction, with other variables not included in this study model influencing the remaining 85.8%. As a result, the model can accurately predict employee performance, but it is not very good at describing changes in job satisfaction (Malini et al., 2024).

Hypothesis Testing

Internal testing was done to ascertain the association between constructs based on the findings of the SEM path analysis using SmartPLS version 4.1.1.2. The probability numbers and Tstatistic show how well the hypothesis was tested. The hypothesis is accepted if the T-statistic value is higher than the T-table value. Both direct and indirect effect testing are included in this hypothesis test.

Table 6. Direct Effect

	Original sample (O)	*Sample mean (M)*	*Standard deviation (STDEV)*	*T statistics (|O/STDEV|)*	*P values*
Job Satisfaction (Z) -> Employee Performance (Y)	*0.672*	*0.683*	*0.084*	*8,003*	*0,000*
Human Resource Development (X) -> Job Satisfaction (Z)	*0.377*	*0.405*	*0.115*	*3,267*	*0.001*
Human Resource Development (X) -> Employee Performance (Y)	*0.387*	*0.411*	*0.119*	*3,261*	*0.001*

Source: Smart PLS 4.1.1.2, 2026

It is clear from the following table that the factors under investigation have a substantial positive influence on one another. First, there is a statistically significant link between Job Satisfaction (Z) and Employee Performance (Y), with an original sample value of 0.672 and a P value of 0.000. Additionally, Job Satisfaction (Z) is positively and significantly impacted by Human Resource Development (X), as seen by the original sample value of 0.377 and the P value of

0.001, which is less than 0.05. Lastly, with a P value of 0.001 and an original sample value of 0.387, Human Resource Development (X) has a significant positive impact on Employee Performance (Y). Since every relationship examined in this table has a positive influence and a P value less than 0.05, it can be said that every relationship examined is significant (Firmansyah et al, 2025).

Table 7. Indirect Effect

	Original sample (O)	*Sample mean (M)*	*Standard deviation (STDEV)*	*T statistics (|O/STDEV|)*	*P values*
Human Resource Development (X) -> Job Satisfaction (Z) -> Employee Performance (Y)	*0.253*	*0.277*	*0.087*	*2,909*	*0.004*

Source: Smart PLS 4.1.1.2, 2026

It may be inferred from the table that Human Resource Development (X) influences Employee Performance (Y) indirectly through Job Satisfaction (Z). With a P value of 0.004, which is less than 0.05, the initial sample value (O) of 0.253 denotes a substantial positive effect. Accordingly, the impact of HRD on employee performance is reinforced by Job Satisfaction (Z), which functions as a mediating variable. Therefore, job happiness will rise in proportion to the quality of human resource development, which will positively affect employee performance.

Conclusion The Influence of Human Resource Development on Employee Performance

With an original sample value of 0.387 and a P value of 0.001 < 0.05, the analysis results demonstrate that employee performance is positively and significantly impacted by human resource (HR) development. This implies that employee performance increases with improved HR development. This result shows that HR development—including training and skill development—is essential to raising employee performance (Batubara & Harahap, 2025).

The Influence of Human Resource Development on Job Satisfaction

Human resource development has also been shown to have a positive and significant impact on job satisfaction, with an original sample value of 0.377 and a P value of 0.001 < 0.05. This indicates that well-conducted human resource development can improve employee job satisfaction. With better human resource development, employees feel more valued and motivated, which ultimately increases their job satisfaction (Andika, 2025).

The Influence of Job Satisfaction on Employee Performance

Job satisfaction has been shown to have a positive and significant effect on employee performance, with an original sample value of 0.672 and a P value of 0.000 <0.05. This indicates that the higher the level of job satisfaction, the higher the employee performance. Job satisfaction plays a crucial role in motivating employees to perform better, ultimately improving their performance (Batubara & Rambe, 2025).

The Influence of Human Resource Development on Employee Performance Through Job Satisfaction

Human resource development also influences employee performance through job satisfaction as a mediating variable, with an original sample value of 0.253 and a P value of 0.004 <0.05. This indicates that human resource development not only directly impacts employee performance but also increases job satisfaction, which in turn positively impacts employee

performance. Job satisfaction plays a crucial role in strengthening the influence of human resource development on employee performance (Firmansyah et al., 2023).

Recommendation

Based on the results of this study, it is recommended that companies or organizations focus more on human resource (HR) development as a strategic step to improve employee performance. Effective HR development, such as training, education, and skills development, can enhance employee competency and contribute directly to improved performance. Therefore, it is crucial for organizations to provide development programs that can help employees improve their skills in line with evolving job requirements.

Furthermore, job satisfaction has been shown to play a significant role in influencing employee performance. Therefore, companies need to create a supportive work environment that prioritizes employee well-being. Steps such as recognizing achievements, improving communication between management and employees, and offering appropriate incentives or compensation can increase job satisfaction. Employees who feel valued and satisfied with their work tend to be more motivated to perform better, which in turn increases their productivity and performance.

Finally, human resource development should be viewed as a long-term investment that not only directly impacts employee performance but also improves job satisfaction as a mediating factor. Therefore, organizations should ensure that human resource development programs focus not only on improving technical skills but also on psychological aspects that influence job satisfaction, such as providing constructive feedback, developing positive interpersonal relationships in the workplace, and creating a comfortable and supportive work environment.

With a holistic approach, organizations can create favorable conditions for employees to develop and contribute more effectively to achieving organizational goals.

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