

ANALYSIS OF WORKLOAD AND COMPETENCY ON EFFECTIVENESS EMPLOYEES WITH TRAINING AS A MODERATING VARIABLE AT PT PLN (PERSERO) UID NORTH SUMATRA

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Abstract

This study aims to analyze the effect of workload and competence on employee effectiveness with training as a moderating variable at PT PLN (Persero) UID North Sumatra. This quantitative study was conducted with the aim of adjusting the research and analyzing the effect of workload and competence on employee effectiveness, with training as a moderating variable at PT PLN (Persero) UID North Sumatra. Data were collected from 81 customer service unit employees. The results of the study indicate that workload has a negative and significant effect on employee effectiveness, competence and training have a positive and significant effect on employee effectiveness. Training does not act as a moderating variable between the effect of workload and competence on employee effectiveness.

Keywords: *Workload, Competence, Employee Effectiveness, Training, Moderating Variables, PT PLN (Persero) UID North Sumatra.*

INTRODUCTION

A superior company is one that is able to manage its human resources effectively and efficiently. In a large organization like PT PLN (Persero) UID North Sumatra, operational success is largely determined by employee effectiveness, which is influenced by various factors such as workload, competence, and adequate training support. According to Handoko (2021), workload is the total work activities a person must complete within a specific timeframe. If unbalanced, it can negatively impact employee motivation and performance. Too high a workload will reduce concentration and performance, while too low a workload can lower productivity and morale (Tarwaka, 2020). In the context of PT PLN, high technical and administrative workloads pose a significant challenge. On the other hand, employee competency also plays a crucial role in determining organizational performance. Spencer & Spencer (2021) state that competency is a fundamental individual characteristic directly related to effective work performance. Competent employees are able to adapt to work challenges and complete tasks optimally, even under high operational pressure, such as that frequently encountered by PLN.

However, the relationship between workload and competency on employee effectiveness can be influenced by training as a moderating variable. Training is a strategic investment in human resource development. According to Fahrozi et al. (2022), effective training helps employees improve skills and knowledge relevant to their job duties and adapt to the dynamics of technology and work systems. Training can also strengthen competency and act as a buffer when workloads increase, allowing employees to continue working effectively. Previous research by Gustiana et al. (2022) showed that relevant and continuous training significantly improves work effectiveness, particularly in public service organizations that demand speed and accuracy of service, such as PLN. Furthermore, training can also enrich employees' technical and non-technical competencies, better preparing them to face complex work challenges. Therefore, this study aims to analyze the influence of workload and competency on employee effectiveness, with training as a moderating variable, at PT PLN (Persero) UID North Sumatra. The results are expected to provide strategic recommendations for more optimal human resource management within the electricity provider.

LITERATURE REVIEW

Theoretical Framework

Effectiveness

Understanding Effectiveness

According to Handoko (2023), effectiveness is: the level of success in achieving predetermined goals by optimally and efficiently utilizing available resources. Effectiveness relates to the final results (output) achieved, not just the process.

Effectiveness Indicators

Handoko said that effectiveness can be measured through several main indicators:

1. Punctuality in Completing Tasks Employees complete work according to deadlines.
2. Achievement of Performance Targets Employee work output meets or exceeds the targets set.
3. Efficient Use of Resources Minimizes wasted time, energy and costs.
4. Quality of Work Results Employee work results are satisfactory and meet quality standards.
5. Teamwork Ability Able to work in a team, foster communication and collaboration.

Training

Definition of Training

Fahrozi et al. (2022) define training as a directed process provided by companies to employees to shape their behavior to align with company goals. The training provided by companies relates to the employee's abilities and skills that will be used in their current job.

Training Indicators

Indicators used to measure training effectiveness according to Fahrozi et al. (2022) include:

- 1) Training Instructor: The quality and competence of the instructor in delivering the material.
- 2) Training Participants: Participants' readiness and enthusiasm in participating in the training.
- 3) Training Material: Relevance and completeness of the material presented.
- 4) Training Methods: The techniques and approaches used in the training process.
- 5) Training Objectives: Clarity and achievement of established objectives.
- 6) Training Objectives: The suitability of the training provided to the needs of the organization and individuals.

Competence

Understanding Competence

According to Spencer & Spencer (2021), competency encompasses the knowledge, skills, and attitudes necessary to perform a job effectively. Competency is a combination of technical and non-technical abilities that support individuals in achieving their desired work goals.

Competency Indicators

Competency indicators can be measured through various aspects as follows:

- 1) Technical Skills
Ability to apply technical knowledge in everyday work.
- 2) Interpersonal Skills
The ability to work in a team, communicate effectively, and build harmonious relationships in the workplace.
- 3) Problem Solving and Decision Making
The ability to analyze a situation or problem and make the right decision based on the available information.
- 4) Time Management and Organization
The ability to manage time and resources to achieve work goals efficiently.
- 5) Innovation and Creativity
The ability to generate new ideas and complete tasks in innovative and different ways.
- 6) Leadership
The ability to lead others, inspire teams, and manage resources to achieve organizational goals.

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RESEARCH METHOD

Types of research

The type of research used by the researcher was quantitative. This type of quantitative research was conducted to conduct a study aimed at tailoring research and analyzing workload and competency on employee effectiveness, with training as a moderating variable at PT PLN (Persero) UID North Sumatra.

Research Location and Research Time

The research location was at PT PLN (Persero) UID North Sumatra, located at Jalan KL. Yos Sudarso No. 8, Glugur Kota, West Medan District, Medan City. The research period was carried out for 3 months, from April to June 2025.

Population and Sample

In this study, the population consisted of 81 individuals working in the customer service unit. The sample size represents a subset of the population and its characteristics. The sample was used because it was impossible for researchers to study the entire population due to time, cost, and personnel constraints.

Research Data Sources

The data sources used in this study are primary data.

RESULTS AND DISCUSSION

Outer Model Analysis

Outer Model Analysis musePLS Algorithm, produce:

Validity Test

Table 1. ValuesOuter Loadings

	Workload	Workload * Training	Employee Effectiveness	Competence	Competence * Training	Training
Workload * Training		1,080				
Competence * Training					1,594	
X1.1	0.942					
X1.2	0.944					
X1.3	0.943					
X1.4	0.920					
X1.5	0.944					
X1.6	0.929					
X2.1				0.896		
X2.2				0.904		
X2.3				0.879		
X2.4				0.883		
X2.5				0.854		
X2.6				0.901		
Y2			0.851			
Y3			0.892			
Y4			0.893			
Y5			0.819			
Z1						0.896
Z2						0.927
Z3						0.913

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	Workload	Workload * Training	Employee Effectiveness	Competence	Competence * Training	Training
Z4						0.912
Z5						0.893
Z6						0.922
Y1			0.726			

Source: Smart PLS Output, 2025

Based on the values in Table 1 above, it shows the results of testing the outer model through the loading factor value /Based on outer loadings, all indicators in each variable have a loading value of ≥ 0.70 . This indicates that each indicator is able to represent the construct being measured validly and robustly. Therefore, it can be concluded that all items in the questionnaire have met the convergent validity criteria and can be used in further analysis. For more details on the above values, see the following figure.

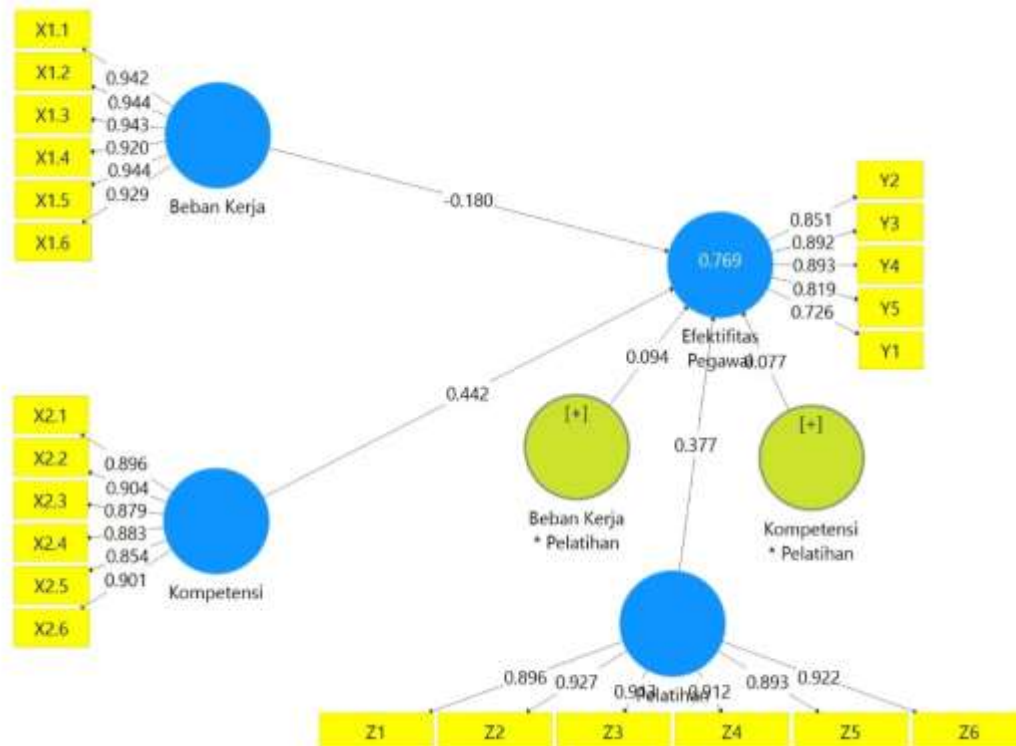


Figure 1. Outer Loadings

In this study there are two equations consisting of structural equation 1 and structural equation 2.

Substructure Equation 1:

$$Y1 = \beta1X1 + \beta3(X1*Z) + e1$$

$$Y1 = -0.180X1 + 0.094(X1*Z) + e1$$

Substructure Equation 2:

$$Y2 = \beta2X2 + \beta4(X2*Z) + e2$$

$$Y2 = 0.442X2 + 0.077(X2*Z) + e2$$

Reliability Test

Table 2. Construct Reliability and Validity Test

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Workload	0.972	0.974	0.977	0.878
Workload * Training	1,000	1,000	1,000	1,000
Employee Effectiveness	0.893	0.905	0.922	0.703
Competence	0.946	0.950	0.957	0.786
Competence * Training	1,000	1,000	1,000	1,000
Training	0.959	0.960	0.967	0.830

Source: Smart PLS Output, 2025

Table 2 above shows that the reliability test results show that the Cronbach's Alpha and Composite Reliability values for all constructs are above 0.70. This indicates that all indicators have high internal consistency and can be relied upon to measure their respective constructs. Therefore, the research instrument is deemed reliable and suitable for use in testing the structural model.

Coefficient of Determination (R²)

Evaluating a model with PLS begins by examining the R-square for each dependent latent variable. The table below shows the results of R-square estimation using SmartPLS.

Table 3. R Square Results

	R Square	R Square Adjusted
Employee Effectiveness	0.769	0.757

Source: Smart PLS, 2025

In table 3, there is an R square value for employee effectiveness of 0.769, meaning that workload, competence and training are 0.769 or 76.9%, the remainder is in other variables outside the model.

Structural Model Testing (Inner Model)

Hypothesis Testing

Direct Influence Between Variables

The direct influence between variables can be seen in the path coefficients. The data processing results show the direct influence values, as shown in the following table.

Table 4. Path Coefficients (Direct Effect)

	Original Sample	T Statistics	P Values	Conclusion
Workload -> Employee Effectiveness	-0.180	2,904	0.004	Accepted
Competence -> Employee Effectiveness	0.442	3,234	0.001	Accepted
Training -> Employee Effectiveness	0.377	2,771	0.006	Accepted
Workload * Training -> Employee Effectiveness	0.094	1,167	0.244	Rejected
Competence * Training -> Employee Effectiveness	0.077	0.790	0.430	Rejected

Source: Smart PLS Output, 2025

In the results of Table 4 there are direct influence values which will be explained as follows:

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1. Workload has a negative and significant effect on employee effectiveness, with a t-statistic value of 2.904 above 1.96 and a significance value of 0.004 below 0.05. This means that workload has a negative and significant effect on employee effectiveness because the significance value is below 0.05. The results of this study are in line with previous research which stated that workload has a negative and significant effect on employee effectiveness (Darmawan & Putra, 2022).
2. Competence has a positive and significant influence on employee effectiveness with a t-statistic value of 3.234, above 1.96, and a significance level of 0.001 below 0.05, indicating that workload has a positive and significant effect on employee effectiveness, as the significance value is below 0.05. This finding aligns with previous research, which found that competence has a positive and significant effect on employee effectiveness (Depri, 2022).
3. Training has a positive and significant effect on employee effectiveness with a t-statistic value of 2.771 above 1.96 and a significance value of 0.006 below 0.05, meaning that training has a positive and significant effect on employee effectiveness because the significance value is below 0.05. The results of this study are in accordance with the results of previous studies which stated that training has a positive and significant effect on employee effectiveness.
4. Workload has a positive but not significant effect on employee effectiveness, reinforced by training with a t-statistic value of 1.167 below 1.96 and a significance of 0.244 below 0.05 means that training does not play a role as a moderating variable between the influence of workload on employee effectiveness because the significance value is below 0.05.
5. Competence has a positive but not significant effect on employee effectiveness, reinforced by training with a t-statistic value of 0.790 below 1.96 and a significance of 0.430 below 0.05 means that training does not play a role as a moderating variable between the influence of competence on employee effectiveness because the significance value is below 0.05.

CONCLUSION

1. Workload has a positive and significant effect on employee effectiveness at PT PLN (Persero) UID North Sumatra.
2. Competence has a positive and significant influence on employee effectiveness at PT PLN (Persero) UID North Sumatra.
3. Training has a positive and significant impact on employee effectiveness at PT PLN (Persero) UID North Sumatra.
4. Workload has a positive and significant effect on employee effectiveness which is strengthened by training at PT PLN (Persero) UID North Sumatra.
5. Competence has a positive and significant influence on employee effectiveness which is strengthened by training at PT PLN (Persero) UID North Sumatra.

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