Organizational Strategies in Strengthening Occupational Safety and Health Culture

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Abstract
This study aims to analyze the effect of organizational commitment and supervision on occupational safety and health (OSH) culture with OSH risk perception as an intervening variable among employees of PT PLN (Persero) ULP Tanah Jawa. This research employed a quantitative approach using a survey method. The population consisted of all employees, with a total sample of 57 respondents selected using a saturated sampling technique. Data were collected through questionnaires and analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM). The results show that organizational commitment has a positive and significant effect on OSH culture and OSH risk perception. Supervision has a positive and significant effect on OSH risk perception but does not have a significant direct effect on OSH culture. Furthermore, OSH risk perception has a positive and significant effect on OSH culture. In addition, OSH risk perception is proven to mediate the effect of organizational commitment and supervision on OSH culture. These findings indicate that improving OSH culture at PT PLN (Persero) ULP Tanah Jawa should focus on strengthening organizational commitment, enhancing consistent supervision, and increasing employees' OSH risk perception.

Keywords: Organizational Commitment, Supervision, OSH Culture, OSH Risk Perception.

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Introduction

Organizations with a high commitment to OSH will provide adequate resources, implement clear policies, and foster collective awareness to behave safely in the workplace. One factor that influences the success of implementing an OSH culture is organizational commitment. Organizational commitment reflects the extent to which leaders and all members of the organization have the determination and responsibility to implement occupational safety and health values in every activity. Without strong commitment from management and employees, various designed OSH programs will not run effectively. Good supervision is not only about control but also about guidance that can encourage behavioral change towards a safer direction. Supervision can be a tool to strengthen the implementation of OSH policies in the field and reduce workplace safety violations. Besides organizational commitment, supervision also plays an important role in shaping a positive OSH culture. Consistent and directed supervision can ensure that every worker complies with safe work procedures and applicable operational standards. Thus, supervision can be a tool to strengthen the implementation of OSH policies in the field and reduce workplace safety violations. An individual's perception of work risks also becomes an important factor that can bridge (intervene) the relationship between organizational commitment, supervision, and OSH culture. OSH risk perception describes how a person assesses the potential hazards and consequences of the work activities they perform. If risk perception is high, individuals tend to be more cautious and compliant with safety rules. Conversely, low risk perception often leads to negligence towards workplace hazards. Therefore, risk perception can be a key variable that mediates the influence of organizational policies and supervision on the formation of a strong OSH culture. This research is expected to provide a more comprehensive understanding of how organizational and individual factors interact in forming a strong OSH culture. In addition, the results of this study can serve as input for the management of PT PLN (Persero) ULP Tanah Jawa in formulating policies and strategies for sustainable improvement of workplace safety.

Problem Formulation

1. Does organizational commitment have a positive and significant effect on OSH Culture at PT PLN (Persero) ULP Tanah Jawa?
2. Does supervision have a positive and significant effect on OSH Culture at PT PLN (Persero) ULP Tanah Jawa?
3. Does organizational commitment have a positive and significant effect on OSH Risk Perception at PT PLN (Persero) ULP Tanah Jawa?
4. Does supervision have a positive and significant effect on OSH Risk Perception at PT PLN (Persero) ULP Tanah Jawa?
5. Does OSH risk perception have a positive and significant effect on OSH Culture at PT PLN (Persero) ULP Tanah Jawa?
6. Does organizational commitment have a positive and significant effect on OSH Culture through OSH Risk Perception at PT PLN (Persero) ULP Tanah Jawa.
7. Does supervision have a positive and significant effect on OSH Culture through OSH Risk Perception at PT PLN (Persero) ULP Tanah Jawa?

Research Objective

1. To test and analyze the effect of Organizational Commitment on OSH Culture at PT PLN (Persero) ULP Tanah Jawa.
2. To test and analyze the effect of Supervision on OSH Culture at PT PLN (Persero) ULP Tanah Jawa.
3. To test and analyze the effect of Organizational Commitment on OSH Risk Perception at PT PLN (Persero) ULP Tanah Jawa.
4. To test and analyze the effect of Supervision on OSH Risk Perception at PT PLN (Persero) ULP Tanah Jawa.

5. To test and analyze the effect of OSH risk perception on OSH culture at PT PLN (Persero) ULP Tanah Jawa.
6. To test and analyze the effect of Organizational Commitment on OSH Culture through OSH Risk Perception at PT PLN (Persero) ULP Tanah Jawa.
7. To test and analyze the effect of Supervision on OSH Culture through OSH Risk Perception at PT PLN (Persero) ULP Tanah Jawa.

OSH Culture

According to Cooper (2016), OSH culture is the interaction between psychological (attitudes and perceptions), behavioral (actual actions), and situational (systems and policies) factors in an organization that influences work safety. According to Ramli (2017), OSH culture is the values, beliefs, and attitudes shared by members of an organization that determine the extent to which occupational safety and health are prioritized in every work activity.

Indicators of OSH Culture

According to Cooper (2016):

a. Compliance with OSH procedures
b. Awareness and responsibility for safety
c. Active participation in OSH programs
d. Communication and reporting of work risks
e. Management support for safety practices

Factors Influencing OSH Culture

According to Cooper (2018), the factors that shape OSH culture include three main elements:

a. Psychological: individual perceptions and attitudes towards safety.
b. Behavioral: actual actions in implementing OSH.
c. Situational: systems, organizational structure, and management policies.

Organizational Commitment

According to Robbins & Judge (2019), organizational commitment is the attitude of employees that reflects loyalty, attachment, and desire to maintain a relationship with the organization. According to Meyer & Allen (2017), organizational commitment is a psychological condition that binds employees to remain part of the organization and influences their decision to continue working in the organization.

Indicators of Organizational Commitment

According to Meyer & Allen (2017):

a. Loyalty to the organization
b. Compliance with organizational rules
c. Desire to contribute to organizational goals
d. Sense of responsibility towards the organization
e. Willingness to remain part of the organization

Supervision

According to Robbins & Coulter (2019), supervision is the activity of ensuring employees' work aligns with organizational goals through systematic observation and evaluation. According to Mangkunegara (2017), supervision is the process of controlling employee activities to remain in accordance with plans, procedures, and applicable work standards.

Indicators of Supervision according to Robbins & Coulter (2019):

a. Monitoring the implementation of OSH procedures
b. Evaluation of employee compliance

c. Provision of guidance or correction regarding work behavior
d. Consistency of supervision by superiors
e. Enforcement of work safety standards

OSH Risk Perception

According to Zohar (2018), OSH risk perception is a personal evaluation of workplace safety threats and the tendency to take preventive actions. According to Cox & Cheyne (2017), risk perception is employees' subjective understanding of the level of danger and consequences of the work activities they perform.

Indicators of OSH Risk Perception according to Zohar (2018):

a. Awareness of potential workplace hazards
b. Assessment of the likelihood of accidents
c. Concern for safety procedures
d. Readiness to take preventive actions
e. Personal sense of responsibility for safety

Conceptual Framework

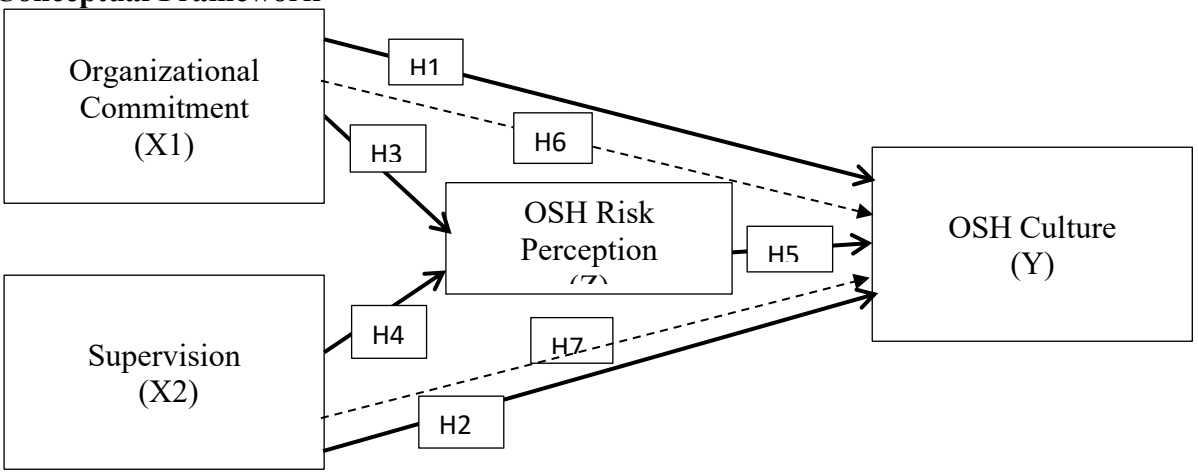

Figure 1. Conceptual Framework

Research Hypotheses

H1 Organizational commitment has a positive and significant effect on OSH Culture at PT PLN (Persero) ULP Tanah Jawa.
H2 Supervision has a positive and significant effect on OSH Culture at PT PLN (Persero) ULP Tanah Jawa.
H3 Organizational commitment has a positive and significant effect on OSH Risk Perception at PT PLN (Persero) ULP Tanah Jawa.
H4 Supervision has a positive and significant effect on OSH Risk Perception at PT PLN (Persero) ULP Tanah Jawa.
H5 OSH risk perception has a positive and significant effect on OSH culture at PT PLN (Persero) ULP Tanah Jawa.
H6 Organizational commitment has a positive and significant effect on OSH culture through OSH Risk Perception at PT PLN (Persero) ULP Tanah Jawa.
H7 Supervision has a positive and significant effect on OSH culture through OSH Risk Perception at PT PLN (Persero) ULP Tanah Jawa.

Type of Research

This type of research is quantitative research with a causality approach (causal research), namely research aimed at knowing the influence of one variable on another. This study analyzes

the relationship between variables using the Partial Least Squares (PLS-SEM) approach to test the conceptual model (Hair, Hult, Ringle, & Sarstedt, 2018).

Research Location and Time

This research was conducted at the Office of PT PLN (Persero) ULP Tanah Jawa, located at: Jl. Suhimahasar No.21, Tanjung Pasir Village, Tanah Jawa District, Simalungun Regency 21181. The research time starts from November to December 2025.

Population and Sample

According to Sekaran & Bougie (2018), a population is the entire subject or object that has certain characteristics that are the focus of the research. In this study, the population is all employees of PT PLN (Persero) ULP Tanah Jawa involved in the implementation of work safety (OSH) procedures. This population was chosen because they are directly involved in operational activities relevant to the research variables, namely organizational commitment, supervision, OSH risk perception, and OSH culture. Population size: 57 people. A sample is a part of the population that represents the entire population in the research According to Sugiyono I2018). Given the relatively small population size, this study uses a saturated sampling (census sampling) technique, meaning the entire population is used as the research sample. Thus, the research sample size is the same as the population size, which is 57 respondents.

Research Data Sources

In this study, the data used comes from primary sources. According to Sekaran & Bougie (2018), primary data is data obtained directly from respondents through systematic collection of information according to research objectives. Primary data is original and specific to answer the research problem, thus providing accurate and relevant information.

Data Analysis Technique

Data analysis technique is an important stage in quantitative research that aims to test the relationship between variables based on the data that has been collected. In this study, data analysis was carried out using Partial Least Squares Structural Equation Modeling (PLS-SEM) with the help of SmartPLS 3.0 software.

According to Ghozali and Latan (2018), SmartPLS is a variance-based software used to estimate the relationships between latent variables in a structural model. This method is suitable for use because it can test models with reflective and formative indicators simultaneously, and does not strictly require the assumption of normal data distribution.

PLS-SEM in SmartPLS 3.0 consists of two main stages, namely:

1. Measurement Model Evaluation (Outer Model). The measurement model is evaluated through:
   a. Convergent Validity
   b. Discriminant Validity
   c. Reliability Test
2. Structural Model Evaluation (Inner Model). According to Ghozali & Latan (2018), this stage aims to assess the relationship between latent variables based on path coefficient and R-square values. Significance testing is done using bootstrapping technique, which produces t-statistic and p-value values to determine whether the relationship between variables is significant or not.

Results and Discussion

Outer Model Analysis

Convergent Validity

Factor loadings show in this test, the threshold value is 0.7, and the extracted variance threshold, Average Variance Extracted (AVE), is set at 0.5; values above this indicate validity. This shows that if the indicator value is > 0.7 able to explain the construct variable, then that indicator value is considered valid. The research structural model is illustrated in the following figure:

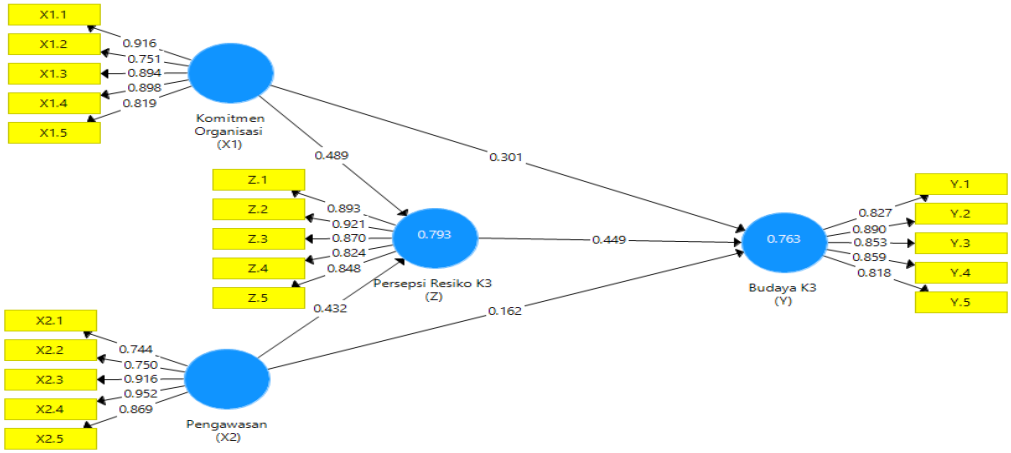

Figure 2. Outer Model

Source : Smart PLS 3.3.3

The Smart PLS output for loading factor provides results in the following table: Outer Loadings. In this study, there are equations and the equation consists of two substructures.

For substructure 1

$Z = b1X1 + b2X2 + e1$

$Z = 0{,}243 + 0{,}652 + e1$

For substructure 2

$Y = b4X1 + b5X2 + b7Z + e2$

$Y = 0{,}090 + 0{,}429 + 0{,}419 + e2$

Table 1. Outer Loadings

	OSH Culture _(Y)	Organizational Commitment _(X1)	Supervision_ (X2)	OSH Risk Perception _(Z)
X1.1		0,916		
X1.2		0,751		
X1.3		0,894		
X1.4		0,898		
X1.5		0,819		
X2.1			0,744	
X2.2			0,750	
X2.3			0,916	
X2.4			0,952	
X2.5			0,869	
Y.1	0,827			
Y.2	0,890			
Y.3	0,853			
Y.4	0,859			
Y.5	0,818			
Z.1				0,893
Z.2				0,921

Z.3				0,870
Z.4				0,824
Z.5				0,848

Source : Smart PLS 3.3.3

The results of the outer loadings test show that all indicators for the variables have met the convergent validity criteria. Thus, all indicators are declared valid and suitable for use in further model analysis.

Discriminat Validity

The next step in the analysis is to determine which data is valid in terms of discriminant validity. The goal is to determine whether the cross loading value is greater compared to other variables so as to understand the indicator's sensitivity to corrections and its high correlation with the construct. The table below presents the validity assessment results as follows:

Table 2. Discriminant Validity

	OSH Culture _(Y)	Organizational Commitment _(X1)	Supervision_ (X2)	OSH Risk Perception _(Z)
X1.1	0,714	**0,916**	0,840	0,826
X1.2	0,794	**0,751**	0,645	0,796
X1.3	0,688	**0,894**	0,734	0,692
X1.4	0,656	**0,898**	0,746	0,674
X1.5	0,680	**0,819**	0,759	0,682
X2.1	0,697	0,672	**0,744**	0,569
X2.2	0,661	0,556	**0,750**	0,625
X2.3	0,668	0,804	**0,916**	0,839
X2.4	0,713	0,799	**0,952**	0,839
X2.5	0,713	0,849	**0,869**	0,740
Y.1	**0,827**	0,701	0,623	0,674
Y.2	**0,890**	0,657	0,652	0,695
Y.3	**0,853**	0,653	0,734	0,711
Y.4	**0,859**	0,747	0,707	0,812
Y.5	0,818	0,762	0,717	0,701
Z.1	0,763	0,804	0,801	**0,893**
Z.2	0,773	0,775	0,790	**0,921**
Z.3	0,751	0,765	0,702	**0,870**
Z.4	0,669	0,696	0,681	**0,824**
Z.5	0,739	0,725	0,757	**0,848**

Source : Smart PLS 3.3.3

The results of the discriminant validity test show that each indicator has the highest loading value on the construct it measures compared to other constructs, and in this research model has met the discriminant validity criteria and is able to distinguish between variables well.

Composite reliability

For each variable in the research, composite reliability compares its reliability value; if the variable value is higher than 0.60 then the research is considered reliable; if between 0.60 and 0.7, then it is not. The table below shows the various blocks used to assess the validity and

reliability of the research, including the AVE value, composite reliability, and Cronbach's alpha value:

Table 3. Construct Reliability and Validity

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted(AVE)
OSH Culture _(Y)	0,904	0,928	0,722
Organizational Commitment _(X1)	0,909	0,933	0,736
Supervision_ (X2)	0,901	0,928	0,723
OSH Risk Perception _(Z)	0,921	0,941	0,760

Source : Smart PLS 3.3.3

The test results show that all variables have Cronbach's Alpha and composite reliability values above 0.70, so all constructs are declared reliable. In addition, the AVE value for each variable also exceeds 0.50, indicating that all constructs have met the convergent validity criteria. Thus, all variables in this study are suitable for further analysis.

Inner Model Analysis

Coefficient of Determination (R2)

Based on data processing that has been carried out using the SmartPLS 3.0 program, the following R Square values were obtained:

Table 4. R Square Results

	R Square	Adjusted R Square
OSH Culture _(Y)	0,763	0,750
OSH Risk Perception _(Z)	0,793	0,785

Source : Smart PLS 3.3.3

The R Square test results show that the OSH Culture variable has an R Square value of 0.763, meaning that 76.3% of the variation in OSH Culture can be explained by the independent variables in the model, while the remaining 23.7% is explained by other factors outside the research model. Meanwhile, OSH Risk Perception has an R Square value of 0.793, indicating that 79.3% of its variation can be explained by the variables in the model, and the remaining 20.7% is influenced by other variables outside the research.

Hypothesis Testing

The relationship between the variables and the data in this sample must be confirmed after the inner model is established. T-Statistics and P-Values are examined to conduct statistical analysis in this case study. To determine whether P-Values < 0.05 and T-Statistic values > 1.96, hypotheses are used. The effect of the path coefficients over time is as follows:

Table 5. Path Coefficients (Direct Effects)

	Original Sample (O)	T Statistics (| O/STDEV |)	P Values	Results
Organizational Commitment _(X1) -> OSH Culture _(Y)	0,301	1,679	0,047	Accepted
Organizational Commitment _(X1) -> OSH Risk Perception _(Z)	0,489	3,949	0,000	Accepted
Supervision_ (X2) -> OSH Culture _(Y)	0,162	0,925	0,178	Rejected
Supervision_ (X2) -> OSH Risk Perception _(Z)	0,432	3,349	0,000	Accepted

OSH Risk Perception _(Z) -> OSH Culture _(Y)	0,449	2,158	0,016	Accepted

Source : Smart PLS 3.3.3

1. Effect of Organizational Commitment on OSH Culture
   Organizational commitment has a positive and significant effect on OSH culture, as indicated by a coefficient value of 0.301 with a T-statistic of 1.679 and P-values of 0.047. Thus, the hypothesis is accepted.
2. Effect of Organizational Commitment on OSH Risk Perception
   Organizational commitment has a positive and significant effect on OSH risk perception, with a coefficient of 0.489, T-statistic of 3.949, and P-values of 0.000. Therefore, the hypothesis is accepted.
3. Effect of Supervision on OSH Risk Perception
   Supervision has a positive and significant effect on OSH risk perception, with a coefficient of 0.432, T-statistic of 3.349, and P-values of 0.000. Therefore, the hypothesis is accepted.
4. Pengaruh Supervision terhadap Persepsi Risiko K3
   Supervision berpengaruh positif dan signifikan terhadap persepsi risiko K3, dengan koefisien sebesar 0,432, T-Statistics 3,349, dan P-values 0,000. Oleh karena itu, hipotesis Accepted.
5. Effect of OSH Risk Perception on OSH Culture
   OSH risk perception has a positive and significant effect on OSH culture, as indicated by a coefficient of 0.449, T-statistic of 2.158, and P-values of 0.016. Thus, the hypothesis is accepted.

Table 6. Path Coefficients (Indirect Effects)

	Original Sample (O)	T Statistics (| O/STDEV |)	P Values	Results
Organizational Commitment _(X1) -> OSH Risk Perception _(Z) -> OSH Culture _(Y)	0,220	1,823	0,034	Accepted
Supervision_ (X2) -> OSH Risk Perception _(Z) -> OSH Culture _(Y)	0,194	1,838	0,033	Accepted

Source : Smart PLS 3.3.3

6. Effect of Organizational Commitment on OSH Culture through OSH Risk Perception
   Organizational commitment has a positive and significant effect on OSH culture through OSH risk perception, as indicated by a coefficient value of 0.220 with a T-statistic of 1.823 and P-values of 0.034. This shows that OSH risk perception is able to mediate the effect of organizational commitment on OSH culture, so the hypothesis is accepted.
7. Effect of Supervision on OSH Culture through OSH Risk Perception
   Supervision has a positive and significant effect on OSH culture through OSH risk perception, with a coefficient of 0.194, T-statistic of 1.838, and P-values of 0.033. Thus, OSH risk perception acts as a mediating variable in the relationship between supervision and OSH culture, so the hypothesis is accepted.

Conclusion

1. Organizational commitment is proven to have a positive and significant effect in improving OSH culture.
2. Organizational commitment is able to significantly increase OSH risk perception.
3. Supervision does not provide a significant effect on OSH culture.
4. Supervision has a positive and significant effect on increasing OSH risk perception.
5. OSH risk perception plays an important role in significantly strengthening OSH culture.

6. OSH risk perception is able to significantly mediate the effect of organizational commitment on OSH culture.
7. OSH risk perception plays a significant mediating role in the relationship between supervision and OSH culture.

Suggestions

1. The management of PT. PLN (Persero) ULP Tanah Jawa is advised to continue strengthening organizational commitment to OSH through consistent policies, provision of adequate safety facilities, and leadership example in implementing OSH procedures in every work activity.
2. OSH supervision needs to be carried out regularly, in a structured manner, and sustainably. Supervisors are expected not only to focus on procedural compliance but also to provide guidance, reprimands, and constructive feedback so that workers become increasingly aware of the importance of work safety.
3. The company is advised to increase employees' OSH risk perception through socialization, training, safety briefings, and workplace hazard simulations. With a good understanding of risks, workers will be more vigilant and tend to behave safely in carrying out their duties.
4. A strong OSH culture can be built through the active involvement of all employees, providing rewards for safe work behavior, and implementing firm sanctions for OSH violations. Thus, work safety becomes not only an obligation but also a value and habit in the work environment.
5. Subsequent researchers are advised to add other variables such as safety leadership, safety climate, OSH training, or job satisfaction, as well as use different research objects so that the research results are more general and comprehensive.

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