

The Role of Certification in Improving Performance

Muhammad Zein Nasution, Kiki Farida Ferine

Abstract

This study aims to analyze the effect of the implementation of the Occupational Health and Safety Management System (SMK3) and Organizational Culture on employee performance, with K3L Certification as an intervening variable among employees of the Distribution Division at PT PLN (Persero) UID North Sumatra. This research uses a quantitative approach with data collected through questionnaires. The sample consisted of 163 employees, selected using a saturated sampling technique. Data analysis was conducted using Structural Equation Modeling–Partial Least Squares (SEM-PLS). The results indicate that the implementation of SMK3 and Organizational Culture has a positive and significant effect on employee performance. Furthermore, SMK3 implementation and Organizational Culture also have a positive and significant effect on K3L Certification. K3L Certification significantly affects employee performance and mediates the relationship between SMK3 implementation, Organizational Culture, and employee performance. Therefore, improving employee performance can be achieved through effective SMK3 implementation, strengthening organizational culture, and maintaining sustainable K3L certification.

Keywords: SMK3 Implementation, Organizational Culture, K3L Certification, Employee Performance.

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Introduction

Every organization faces high risks of workplace hazards that can cause accidents and significant material losses. The implementation of an Occupational Health and Safety Management System (SMK3) is one strategic effort to create a safe, efficient, and legally compliant workplace. SMK3 is an integral part of a company's management system aimed at controlling risk, preventing workplace accidents, and ensuring protection for workers as well as organizational assets. It serves as an indicator of a company's success in achieving reliable and sustainable operations. These activities require serious attention to workplace safety aspects, as small mistakes can have fatal consequences. The effectiveness of SMK3 implementation heavily depends on the organizational culture formed in the work environment. Organizational culture reflects the collective values, beliefs, and behaviors that guide all employees in their actions and interactions. According to Robbins and Judge (2019), a strong organizational culture can create a shared awareness in achieving organizational goals, including in occupational health and safety aspects. An important aspect that can strengthen the effectiveness of SMK3 implementation and organizational culture is K3L (Occupational Health, Safety, and Environment) Certification. K3L Certification functions as an official recognition of an individual's competence in understanding, applying, and overseeing occupational health and safety standards within the company environment. Through this certification, employees not only possess technical skills to perform their duties but also have awareness and responsibility for consistently applying K3L principles. Employee performance is the result of a combination of various factors, including ability, motivation, work environment, and the management system implemented. Improving employee performance depends heavily on the ability to integrate SMK3 implementation, strengthen organizational culture, and ensure all employees have relevant K3L certification. Building an organizational culture that supports safety still faces challenges, especially regarding the consistency of employee behavior in the field. It is not uncommon to find that some employees have not fully applied K3 principles diligently, for example in using Personal Protective Equipment (PPE) or reporting potential hazards. Employees who possess K3L certification are expected to be more disciplined, responsible, and safety-oriented in carrying out their work, which can positively impact the improvement of individual and overall organizational performance. This research is expected to contribute to expanding the understanding of the relationship between occupational safety management, organizational culture, and performance.

Problem Formulation

1. Does the Implementation of SMK3 have a positive and significant effect on the Performance of Distribution Division employees at PT PLN (Persero) UID North Sumatra?
2. Does Organizational Culture have a positive and significant effect on the Performance of Distribution Division employees at PT PLN (Persero) UID North Sumatra?
3. Does the Implementation of SMK3 have a positive and significant effect on K3L Certification among Distribution Division employees at PT PLN (Persero) UID North Sumatra?
4. Does Organizational Culture have a positive and significant effect on K3L Certification among Distribution Division employees at PT PLN (Persero) UID North Sumatra?
5. Does K3L Certification have a positive and significant effect on the Performance of Distribution Division employees at PT PLN (Persero) UID North Sumatra?
6. Does the Implementation of SMK3 have a positive and significant effect on Employee Performance through K3L Certification in the Distribution Division at PT PLN (Persero) UID North Sumatra?

7. Does Organizational Culture have a positive and significant effect on Employee Performance through K3L Certification in the Distribution Division at PT PLN (Persero) UID North Sumatra?

Research Objectives

1. To test and analyze the effect of SMK3 Implementation on the Performance of Distribution Division employees at PT PLN (Persero) UID North Sumatra.
2. To test and analyze the effect of Organizational Culture on the Performance of Distribution Division employees at PT PLN (Persero) UID North Sumatra.
3. To test and analyze the effect of SMK3 Implementation on K3L Certification among Distribution Division employees at PT PLN (Persero) UID North Sumatra.
4. To test and analyze the effect of Organizational Culture on K3L Certification among Distribution Division employees at PT PLN (Persero) UID North Sumatra.
5. To test and analyze the effect of K3L Certification on the Performance of Distribution Division employees at PT PLN (Persero) UID North Sumatra.
6. To test and analyze the effect of SMK3 Implementation on Employee Performance through K3L Certification in the Distribution Division at PT PLN (Persero) UID North Sumatra.
7. To test and analyze the effect of Organizational Culture on Employee Performance through K3L Certification in the Distribution Division at PT PLN (Persero) UID North Sumatra.

Literature Review Employee Performance

According to Robbins & Judge (2019), employee performance is the work results obtained by individuals or groups within an organization, encompassing target achievement, effectiveness, efficiency, and work behavior that supports organizational goals. According to Mathis & Jackson (2016), employee performance is the work results of individuals measured based on the level of achievement of assigned tasks, both in terms of quality and quantity, in accordance with the given responsibilities.

Employee Performance Indicators

Indicators of Employee Performance according to Mathis & Jackson (2016):

1. Achievement of work targets - The level of employee success in completing tasks according to the quantity set by the organization.
2. Quality of work results - The level of perfection and accuracy of the work produced by employees.
3. Timeliness of task completion - The ability of employees to complete tasks according to schedule or predetermined deadlines.
4. Work initiative and creativity - The ability of employees to take initiative, innovate, and improve work effectiveness.
5. Cooperation and communication - The ability of employees to work together in teams and communicate effectively with coworkers or superiors.

Factors Influencing Employee Performance

Factors influencing employee performance according to Mathis & Jackson (2016) include several main aspects, namely:

1. Ability and Skills
2. Work Motivation
3. Leadership
4. Compensation and Rewards
5. Organizational Culture

6. Work Environment
7. Training and Development
8. Discipline and Work Ethic

Occupational Health and Safety Management System (SMK3)

According to Soekidjo (2018), the Occupational Health and Safety Management System (SMK3) is an organizational effort to create a safe, healthy, and productive work environment through the systematic management of occupational health and safety. According to Astari and Suidarma (2022), SMK3 is a risk control activity related to creating a safe, efficient, and productive work environment. The implementation of SMK3 in companies aims to create a safe and healthy workplace for workers and increase company productivity.

Indicators of the Occupational Health and Safety Management System (SMK3)

According to Soekidjo (2018), SMK3 is an organizational effort to create a safe and healthy work environment. Indicators:

1. Clear organizational structure and responsibilities for OHS.
2. Implementation of SOPs and operational controls.
3. Evaluation of OHS performance, including measurement of accident rates.
4. OHS competency training and development for workers.

Organizational Culture

According to Hatch (2016), organizational culture is defined as a system of meaning shared by organizational members that shapes the identity of the organization. This culture influences how members view work, interact, and make decisions. According to Lunenburg (2018), organizational culture is the values and norms accepted by organizational members that guide organizational behavior, decisions, and strategies in achieving goals.

Indicators of Organizational Culture

Indicators of Organizational Culture according to Hatch (2016) are as follows:

1. Alignment of employee behavior with organizational values -- The extent to which employees carry out tasks and interactions according to the values upheld by the organization.
2. Compliance with organizational norms and rules -- The level of employee adherence to applicable formal and informal rules.
3. Participation in organizational rituals and symbols -- Employee involvement in activities, symbols, or traditions that reflect organizational identity.
4. Commitment to the organization's vision and mission -- The level of understanding and application of the organization's vision and mission in daily work.
5. Cooperation and interaction among members -- The ability of employees to cooperate, communicate, and build harmonious relationships aligned with organizational culture.

K3L Certification (Occupational Health, Safety, and Environment)

According to Rahman (2020), K3L Certification is a formal recognition of employee competence in implementing OHS and work environment procedures, encompassing knowledge, skills, and attitudes towards safety, health, and environmental sustainability. According to Sari (2019), K3L Certification is the process of granting official recognition to employees who demonstrate ability and skills in correctly applying work safety procedures and environmental management according to organizational standards.

Indicators of K3L Certification

Indicators of K3L Certification according to Rahman (2020):

1. Possession of a K3L certificate

2. Knowledge of K3L
3. Practical skills in K3L
4. Proactive attitude towards OHS
5. Application of K3L procedures in daily work

Conceptual Framework

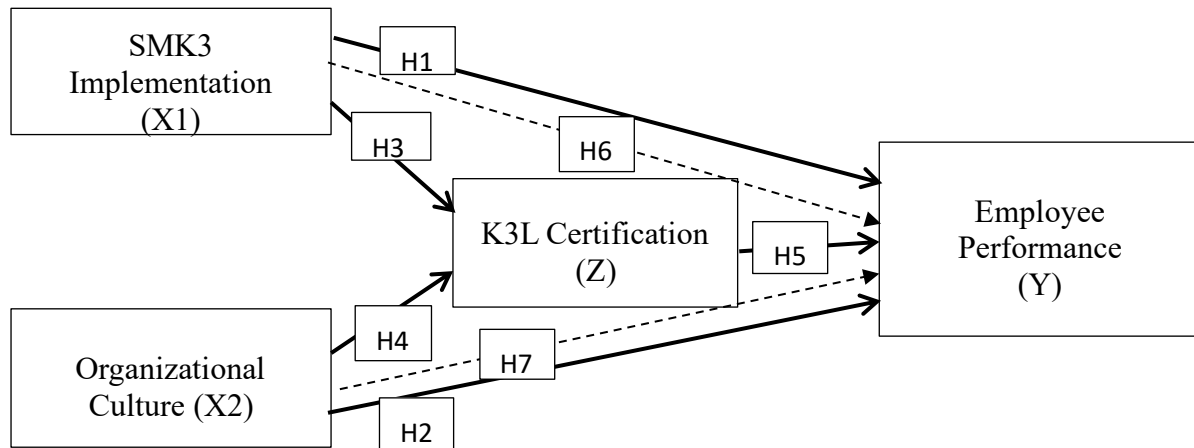


Figure 1. Conceptual Framework

Research Hypotheses

1. SMK3 Implementation has a positive and significant effect on the Performance of Distribution Division employees at PT PLN (Persero) UID North Sumatra.
2. Organizational Culture has a positive and significant effect on the Performance of Distribution Division employees at PT PLN (Persero) UID North Sumatra.
3. SMK3 Implementation has a positive and significant effect on K3L Certification of employees in the Distribution Division at PT PLN (Persero) UID North Sumatra.
4. Organizational Culture has a positive and significant effect on K3L Certification of employees in the Distribution Division at PT PLN (Persero) UID North Sumatra.
5. K3L Certification has a positive and significant effect on the Performance of Distribution Division employees at PT PLN (Persero) UID North Sumatra.
6. SMK3 Implementation has a positive and significant effect on Employee Performance through K3L Certification in the Distribution Division at PT PLN (Persero) UID North Sumatra.
7. Organizational Culture has a positive and significant effect on Employee Performance through K3L Certification in the Distribution Division at PT PLN (Persero) UID North Sumatra.

Research Type

According to Rahman (2020), K3L Certification is a formal recognition of employee competency in implementing occupational health, safety, and environmental procedures, encompassing knowledge, skills, and attitudes toward safety, health, and environmental sustainability. According to Sugiyono (2019), quantitative research is a research method based on the philosophy of positivism, used to research specific populations or samples, with the aim of testing predetermined hypotheses.

Research Time and Location

According to Arikunto (2019), research time and location are important parts that explain the research implementation period and data collection location so that the research can be replicated by other researchers. This research was conducted from November to December 2025, located at Jl. KL. Yos Sudarso No. 284, Glugur Kota, Kecamatan Medan Barat, Kota Medan, Sumatera Utara.

Research Population and Sample

According to Arikunto (2018), a sample is a part or representation of the population to be studied. The population in this study is all respondents totaling 275 people. The Slovin formula is as follows:

$$n = \frac{N}{1 + N \cdot e^2}$$

$$n = \frac{275}{1 + 275 \cdot (0.05)^2}$$

$$n = \frac{275}{1,6875}$$

$$n = 162,98 \approx 163$$

Based on this calculation, the minimum sample size required is 163 respondents.

Data Collection Technique

According to Riduwan (2016), a questionnaire is a data collection technique by providing a set of written questions or statements to respondents to answer. According to Sekaran and Bougie (2020), data collection techniques are an important step in research because they function to obtain information relevant to the research problem. The data collection technique in this study was carried out using a questionnaire.

Data Analysis Technique with Smart PLS 3

According to Jogiyanto and Abdillah (2020), PLS is a method suitable for research with complex models, many latent variables, and data that do not meet the assumption of multivariate normality.

1. Analysis Model in Smart PLS

a. Outer Model (Measurement Model)

According to Ghazali and Latan (2018), evaluation of the measurement model is carried out through several stages, namely:

1. Convergent Validity
2. Discriminant Validity
3. Construct Reliability Test

b. Inner Model (Structural Model)

The structural model is used to evaluate the relationships between latent constructs that have been formulated in the research hypotheses. The inner model evaluation is conducted in several stages as follows:

1. R-Square Test (R^2)
2. Predictive Relevance Test (Q^2)
3. Path Coefficient

Interpretation of Smart PLS Analysis Results

After data processing using Smart PLS 3, the analysis results will be presented in the form of loading factor, path coefficient, t-statistic, and p-value.

- a. If loading factor ≥ 0.7 and p-value < 0.05 , then the indicator is considered valid.
- b. If the R^2 value is high and $Q^2 > 0$, then the model is considered to have good predictive capability.

- c. Meanwhile, the relationship between variables is said to be significant if the t-statistic value > 1.96 .

These results will serve as the basis for interpreting the effects between variables and for testing the research hypotheses.

Results Outer Model Analysis Convergent Validity

This test is viewed from the loading factor; the threshold value is 0.7, and the threshold value for Average Variance Extracted (AVE) is 0.5; if it exceeds these numbers, it is considered valid. This means indicator values are considered valid if they depict the latent variable with a value greater than 0.7. The structural model used in this study is depicted in the figure below:

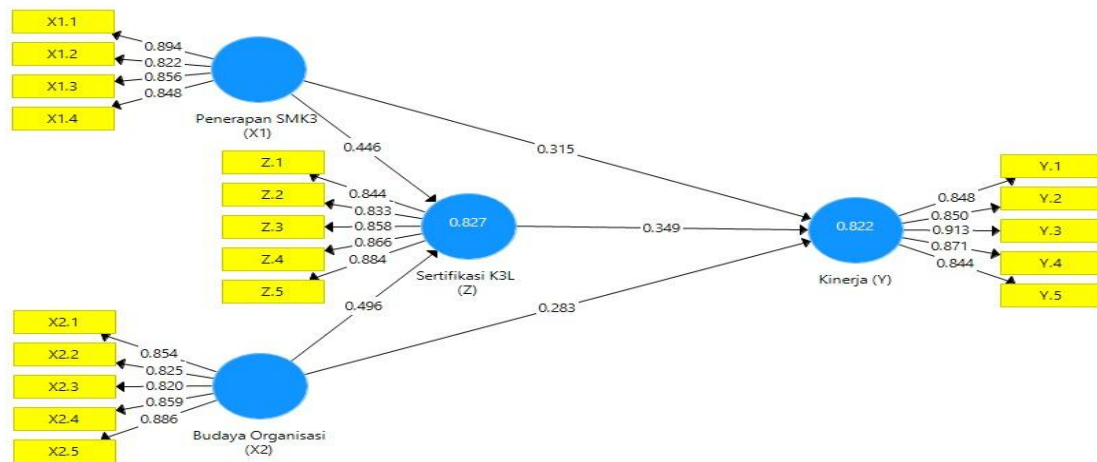


Figure 2. Outer Model

Source: Smart PLS 3.3.3

The Smart PLS output for loading factors provides the results in the table below: Outer Loadings. In this study, there are relationships consisting of two substructures.

For substructure 1

$$Z = b_1X_1 + b_2X_2 + e_1$$

$$Z = 0,446 + 0,496 + e_1$$

For substructure 2

$$Y = b_3X_2 + b_4X_1 + b_5Z + e_2$$

$$Y = 0,315 + 0,283 + 0,349 + e_2$$

Table 1. Outer Loadings

	Organizational Culture (X2)	Employee Performance (Y)	SMK3 Implementation (X1)	K3L Certification (Z)
X1.1			0,894	
X1.2			0,822	
X1.3			0,856	
X1.4			0,848	
X2.1	0,854			
X2.2	0,825			
X2.3	0,820			
X2.4	0,859			
X2.5	0,886			
Y.1		0,848		

Y.2		0,850		
Y.3		0,913		
Y.4		0,871		
Y.5		0,844		
Z.1				0,844
Z.2				0,833
Z.3				0,858
Z.4				0,866
Z.5				0,884

Source : Smart PLS 3.3.3

The outer loadings test results show that all indicators for each variable are able to reflect their constructs well and meet convergent validity criteria, thus they are suitable for use in further model testing.

Discriminant Validity

The following table presents the cross-loading findings from the validity test, as follows:

Table 2. Discriminant Validity

	Organizational Culture (X2)	Employee Performance (Y)	SMK3 Implementation (X1)	K3L Certification (Z)
X1.1	0,785	0,773	0,894	0,809
X1.2	0,697	0,787	0,822	0,753
X1.3	0,710	0,710	0,856	0,719
X1.4	0,762	0,681	0,848	0,702
X2.1	0,854	0,693	0,715	0,741
X2.2	0,825	0,751	0,712	0,729
X2.3	0,820	0,763	0,694	0,717
X2.4	0,859	0,733	0,782	0,801
X2.5	0,886	0,722	0,759	0,750
Y.1	0,781	0,848	0,773	0,810
Y.2	0,697	0,850	0,701	0,696
Y.3	0,763	0,913	0,748	0,752
Y.4	0,765	0,871	0,747	0,725
Y.5	0,722	0,844	0,767	0,790
Z.1	0,802	0,723	0,774	0,844
Z.2	0,790	0,718	0,690	0,833
Z.3	0,731	0,746	0,718	0,858
Z.4	0,711	0,779	0,772	0,866
Z.5	0,744	0,779	0,790	0,884

Source : Smart PLS 3.3.3

Based on the cross-loading results, each indicator has the highest loading value on the construct it measures compared to other constructs. This shows that all constructs have met discriminant validity and can be well distinguished among variables in the research model.

Composite reliability

In this study, composite reliability is used to see each variable's reliability value, and if the variable value is greater than 0.60.

Table 3. Construct Reliability and Validity

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Organizational Culture (X2)	0,903	0,928	0,721
Employee Performance (Y)	0,916	0,937	0,749
SMK3 Implementation (X1)	0,878	0,916	0,732
K3L Certification (Z)	0,910	0,933	0,735

Source : Smart PLS 3.3.3

Based on the cross loading results, each indicator has the highest loading value on the construct it is measuring compared to other constructs. This shows that the entire construct has met the discriminant validity and can be well distinguished between variables in the research model.

Inner Model Analysis Coefficient of Determination (R²)

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

Table 4.R Square Results

	R Square	Adjusted R Square
Employee Performance (Y)	0,822	0,819
K3L Certification (Z)	0,827	0,825

Source: Smart PLS 3.3.3

The R Square value shows that the Performance variable (Y) can be explained by the independent variables in the model by 82.2%, while K3L Certification (Z) can be explained by 82.7%. Meanwhile, the Adjusted R Square values are 0.819 for Performance and 0.825 for K3L Certification, indicating that the model has very strong explanatory power and is suitable for further analysis.

Hypothesis Testing

The test determines whether T-Statistics > 1.96 and P-Values < 0.05. The following are the results of the Path Coefficients for direct effects.

Table 5. Path Coefficients (Direct Effects)

	Original Sample (O)	T Statistics (O/STDEV)	P Values	Results
Organizational Culture (X2) -> Employee Performance (Y)	0,283	3,756	0,000	Accepted
Organizational Culture (X2) -> K3L Certification _(Z)	0,496	7,121	0,000	Accepted
SMK3 Implementation _(X1) -> Employee Performance (Y)	0,315	3,421	0,000	Accepted
SMK3 Implementation _(X1) -> K3L Certification _(Z)	0,446	6,438	0,000	Accepted
K3L Certification _(Z) -> Employee Performance (Y)	0,349	3,896	0,000	Accepted

Source : Smart PLS 3.3.3

1. The Effect of Organizational Culture on Performance

The test results show that Organizational Culture has a positive and significant effect on Performance, with a coefficient value of 0.283, T Statistic of 3.756, and P Value of 0.000. Thus, the hypothesis stating the effect of Organizational Culture on Performance is accepted.

2. The Effect of Organizational Culture on K3L Certification

Organizational Culture has been proven to have a positive and significant effect on K3L Certification, indicated by a coefficient of 0.496, T Statistic of 7.121, and P Value of 0.000. These results indicate that the better the Organizational Culture, the higher the achievement of K3L Certification, so the hypothesis is accepted.

3. The Effect of SMK3 Implementation on Performance

SMK3 Implementation has a positive and significant effect on Performance, with a coefficient of 0.315, T Statistic of 3.421, and P Value of 0.000. This shows that good SMK3 implementation is able to improve Performance, so the hypothesis is accepted.

4. The Effect of SMK3 Implementation on K3L Certification

The analysis results show that SMK3 Implementation has a positive and significant effect on K3L Certification, with a coefficient value of 0.446, T Statistic of 6.438, and P Value of 0.000. Thus, the proposed hypothesis is accepted.

5. The Effect of K3L Certification on Performance

K3L Certification has been proven to have a positive and significant effect on Performance, indicated by a coefficient of 0.349, T Statistic of 3.896, and P Value of 0.000. This confirms that the success of K3L Certification contributes to improving Performance, so the hypothesis is accepted.

Table 6. Path Coefficients (Indirect Effects)

	Original Sample (O)	T Statistics (O/STDEV)	P Values	Results
Organizational Culture (X2) -> K3L Certification _(Z) -> Employee Performance (Y)	0,173	3,431	0,000	Accepted

SMK3 Implementation (X1) -> K3L Certification (Z) -> Employee Performance (Y)	0,156	3,259	0,001	Accepted
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6. The Effect of Organizational Culture on Performance through K3L Certification

The test results show that Organizational Culture has a positive and significant effect on Performance through K3L Certification, with a coefficient value of 0.173, T Statistic of 3.431, and P Value of 0.000. This indicates that K3L Certification is able to mediate the effect of Organizational Culture on Performance, so the hypothesis is accepted.

7. The Effect of SMK3 Implementation on Performance through K3L Certification

SMK3 Implementation has been proven to have a positive and significant effect on Performance through K3L Certification, indicated by a coefficient value of 0.156, T Statistic of 3.259, and P Value of 0.001. Thus, K3L Certification acts as a mediating variable in the relationship between SMK3 Implementation and Performance, so the hypothesis is accepted.

Conclusion

1. Organizational Culture has proven to be able to significantly improve employee performance.
2. Good Organizational Culture plays an important role in increasing the achievement of K3L Certification.
3. Optimal SMK3 Implementation contributes significantly to improving employee performance.
4. SMK3 Implementation has a significant effect in supporting the success of K3L Certification.
5. K3L Certification plays a positive role in improving employee performance.
6. K3L Certification is able to mediate the effect of Organizational Culture, thus impacting performance improvement.
7. K3L Certification acts as a mediator that strengthens the effect of SMK3 Implementation on Performance.

Suggestions

1. Organizational management is advised to continue strengthening the Organizational Culture that supports occupational health, safety, and environment, as it has been proven to improve employee performance both directly and indirectly.
2. SMK3 Implementation needs to be carried out consistently and sustainably through training, socialization, and routine supervision so that it can improve performance and support the achievement of K3L Certification.
3. Organizations need to encourage and maintain K3L Certification as part of a performance improvement strategy, by ensuring compliance with K3L standards and involving all employees in its implementation.
4. Future research is suggested to develop the model by adding other variables, such as organizational commitment, leadership, or job satisfaction, to enrich the study of factors that influence employee performance.

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