Optimizing Performance Through Employee Motivation

Doli Panca Setiawan, Husni Muharram Ritonga, Hernawaty

Abstract

This study aims to analyze the effect of workforce formation and skills on employee performance through motivation as an intervening variable at PT PLN (Persero) UP2D North Sumatra. This research employed a quantitative approach with data collected through questionnaires distributed to 117 employees as the research sample. Data analysis was conducted using Partial Least Squares–Structural Equation Modeling (PLS-SEM). The results indicate that workforce formation and skills have a positive and significant effect on employee performance. In addition, workforce formation and skills also have a positive and significant effect on motivation. Motivation was found to have a positive and significant effect on employee performance. However, the indirect effect test shows that motivation does not mediate the relationship between workforce formation and skills on employee performance. Therefore, employee performance improvement is more directly influenced by workforce formation and skills. This study is expected to provide managerial implications for improving employee performance through proper workforce formation and skill development.

Keywords: Workforce Formation, Skills, Motivation, Employee Performance.

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Introduction

In large companies, employee quality and performance are the key to ensuring a smooth, reliable, and efficient electricity distribution system. Therefore, companies need to ensure that all employees have the right workforce formation, adequate skills, and high work motivation so that organizational goals can be achieved optimally. Workforce formation relates to the placement of the number and type of labor according to operational needs. Inappropriate placement of employees not matching their competencies will cause workload imbalance, decreased productivity, and reduced work motivation. Employee skills also play an important role in supporting organizational performance. Skills include technical, conceptual, and interpersonal abilities possessed by an employee to perform their duties effectively. According to Sutrisno (2019), skill is a person's ability to use knowledge and experience to complete work efficiently and with quality. In the electricity industry like PLN, technical and digital skills are crucial given the increasing application of automation-based technologies in managing electrical networks. However, good formation and skills do not necessarily guarantee improved employee performance if not balanced with high work motivation. Motivation is an internal and/or external drive that moves a person to work with enthusiasm and dedication. According to Robbins and Judge (2020), motivation is the process that explains the intensity, direction, and persistence of a person in achieving a goal. Motivated employees will show commitment, discipline, and innovation at work, which ultimately directly influences performance improvement. In practice, motivation often acts as an intervening variable between personal factors (such as formation and skills) and employee work outcomes. This means that when workforce formation is appropriate and employee skills are high, work motivation can strengthen that relationship for more optimal performance. Conversely, if motivation is low, the potential of good skills and employee placement will not be reflected in maximum work results. Improving employee performance is a priority that cannot be ignored. Common problems include mismatch between formation and field needs, lack of advanced technical training, and low work spirit due to disproportionate workloads. This condition can impact overall organizational effectiveness.

Problem Formulation

1. Does workforce formation have a positive and significant effect on employee performance at PT PLN (Persero) UP2D North Sumatra employees?
2. Do skills have a positive and significant effect on employee performance at PT PLN (Persero) UP2D North Sumatra employees?
3. Does workforce formation have a positive and significant effect on motivation at PT PLN (Persero) UP2D North Sumatra?
4. Do skills have a positive and significant effect on motivation at PT PLN (Persero) UP2D North Sumatra?
5. Does motivation have a positive and significant effect on employee performance at PT PLN (Persero) UP2D North Sumatra?
6. Does workforce formation have a positive and significant effect on employee performance through motivation at PT PLN (Persero) UP2D North Sumatra?
7. Do skills have a positive and significant effect on employee performance through motivation at PT PLN (Persero) UP2D North Sumatra?

Research Objectives

1. To test and analyze the effect of workforce formation on employee performance at PT PLN (Persero) UP2D North Sumatra.

2. To test and analyze the effect of skills on employee performance at PT PLN (Persero) UP2D North Sumatra.
3. To test and analyze the effect of workforce formation on motivation at PT PLN (Persero) UP2D North Sumatra.
4. To test and analyze the effect of skills on motivation at PT PLN (Persero) UP2D North Sumatra.
5. To test and analyze the effect of motivation on employee performance at PT PLN (Persero) UP2D North Sumatra.
6. To test and analyze the effect of workforce formation on employee performance through motivation at PT PLN (Persero) UP2D North Sumatra.
7. To test and analyze the effect of skills on employee performance through motivation at PT PLN (Persero) UP2D North Sumatra.

Employee Performance

According to Wibowo (2018), employee performance is the actual behavior displayed by an individual in carrying out their role or job according to standards set by the organization. According to Mangkunegara (2018), employee performance is the work results, both in quality and quantity, achieved by an employee in performing their duties according to the given responsibilities.

Employee Performance Indicators

According to Wibowo (2018), employee performance indicators include:

1. Work quality.
2. Work quantity.
3. Timeliness.
4. Responsibility in work.
5. Cooperation with co-workers.

Workforce Formation

According to Rivai (2018), workforce formation is a managerial activity related to the placement of labor based on competencies, qualifications, and workload to achieve a balance between organizational needs and human resource capabilities. According to Hasibuan (2018), workforce formation is the process of determining the number, quality, and distribution of employees according to organizational needs so that operational activities can run effectively and efficiently.

Workforce Formation Indicators

According to Hasibuan (2018), workforce formation indicators include:

1. Suitability of the number of employees with organizational needs.
2. Suitability of employee qualifications with the position.
3. Efficiency of labor distribution.
4. Placement according to competencies.
5. Periodic evaluation and adjustment of formation.

Skills

According to Sutrisno (2018), skills are employees' proficiency in using technical and non-technical abilities to complete work with certain standards efficiently and with quality.

According to Mangkunegara (2018), skill is a person's ability to carry out work tasks supported by knowledge, experience, and training, enabling them to produce effective performance.

Skills Indicators

According to Mangkunegara (2018), skill indicators consist of:

1. Technical skill.
2. Conceptual skill.
3. Interpersonal skill.
4. Managerial skill.
5. Ability to adapt to technological changes.

Motivation

According to Siagian (2018), motivation is the driving force that arises within a person to behave in a certain way in achieving desired organizational goals. According to Robbins and Judge (2018), motivation is the process that explains the intensity, direction, and persistence of a person in achieving specific work goals.

Motivation Indicators

According to Robbins and Judge (2018), motivation indicators include:

1. Need for achievement.
2. Need for affiliation.
3. Need for power.
4. Commitment to organizational goals.
5. Persistence in performing tasks.

Conceptual Framework

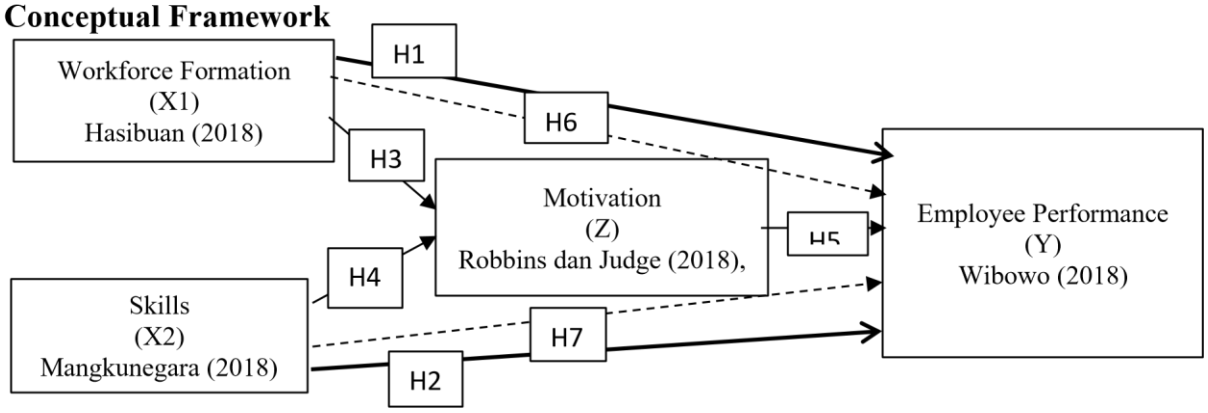

Figure 1. Conceptual Framework

Research Hypotheses

H1 Workforce formation has a positive and significant effect on motivation among employees of PT PLN (Persero) UP2D North Sumatra.

H2 Skills have a positive and significant effect on motivation among employees of PT PLN (Persero) UP2D North Sumatra.

H3 Workforce formation has a positive and significant effect on employee performance at PT PLN (Persero) UP2D North Sumatra.

H4 Skills have a positive and significant effect on employee performance at PT PLN (Persero) UP2D North Sumatra.

H5 Motivation has a positive and significant effect on employee performance at PT PLN (Persero) UP2D North Sumatra.

H6 Workforce formation has a positive and significant effect on employee performance through motivation at PT PLN (Persero) UP2D North Sumatra.

H7 Skills have a positive and significant effect on employee performance through motivation at PT PLN (Persero) UP2D North Sumatra.

Research Type

According to Sugiyono (2018), quantitative research is research whose data is in the form of numbers and is analyzed using statistical techniques to test hypotheses.

This research is quantitative with a causality approach (causal relationship), aiming to determine the effect of workforce formation and skills on employee performance through motivation as an intervening variable at PT PLN (Persero) UP2D North Sumatra.

Research Location and Time

The research was conducted at PT PLN (Persero) UP2D North Sumatra, which is the electricity distribution implementation unit in the North Sumatra region, specifically at Jl. KL. Yos Sudarso No.284, Glugur Kota, Medan Barat District, Medan City, North Sumatra 20238 (PLN UID North Sumatra Office). The selection of this location is based on the relevance and availability of employee data that can be used as a research sample. The research was conducted from November to December 2025.

Population and Sample

The research population is all employees of PT PLN (Persero) UP2D North Sumatra. According to Arikunto (2018), a population is the entire object or subject of interest to the researcher to be studied and from which conclusions are drawn. The population used is 117 employees.

The sample was taken using a saturated sampling technique, meaning all population members are used as research samples, as the number of employees is relatively limited. The sample used is 117 employees.

Data Analysis Technique Using SmartPLS

In this study, data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) with the assistance of SmartPLS 3.0 software. PLS-SEM was chosen because it can analyze complex models with many variables, both reflective and formative, and with a relatively small sample (Ghozali & Latan, 2018). This analysis is divided into two main stages: Outer Model (measurement) and Inner Model (structure).

Outer Model Analysis

Outer model analysis is performed through several steps:

1. Convergent Validity.
2. Reliability
3. Composite Reliability (CR) and Cronbach's Alpha, both are expected to have a minimum value of 0.70.

Inner Model Analysis

The inner model or structural model is used to test the relationships between latent variables. Key measures in the inner model include:

1. Coefficient of Determination (R^2), R^2 shows the extent to which independent variables can explain the dependent variable. An R^2 value ≥ 0.67 is considered strong, 0.33--0.67 moderate, and ≤ 0.19 weak.
2. Path Coefficient, The path coefficient describes the strength and direction of influence between latent variables. The significance of the influence is tested through bootstrapping, typically with 5000 samples. A significant result is indicated by a t-statistic value ≥ 1.96 at a 5% significance level ($\alpha = 0.05$).
3. Predictive Relevance (Q^2), Q^2 is used to assess the predictive ability of the model for endogenous variables through the blindfolding technique. A $Q^2 > 0$ indicates the model has good predictive relevance.

Hypothesis Testing

After the outer and inner model analysis is complete, valid and reliable indicators are used to measure the latent variables. Significant path coefficients indicate the presence of influence between variables according to the hypotheses. Furthermore, the R^2 and Q^2 values are used to assess the strength and predictive ability of the overall model. With this approach, the research can analyze complex relationships between variables with more accurate and reliable results. Visualization of the model in SmartPLS also facilitates understanding of the relationships between variables, both at the indicator level (outer model) and the latent variable level (inner model).

Results and Discussion Outer Model Analysis Convergent Validity

The convergent validity of the measurement model with reflective indicators can be seen from the correlation between item/indicator scores and their construct scores. Indicators with individual correlation values greater than 0.7 are considered valid, but in development-stage research, indicator values of 0.5 and 0.6 are still acceptable. Based on the results for outer loading, there are indicators with loadings below 0.60 and not significant. The structural model in this study is shown in the following figure.

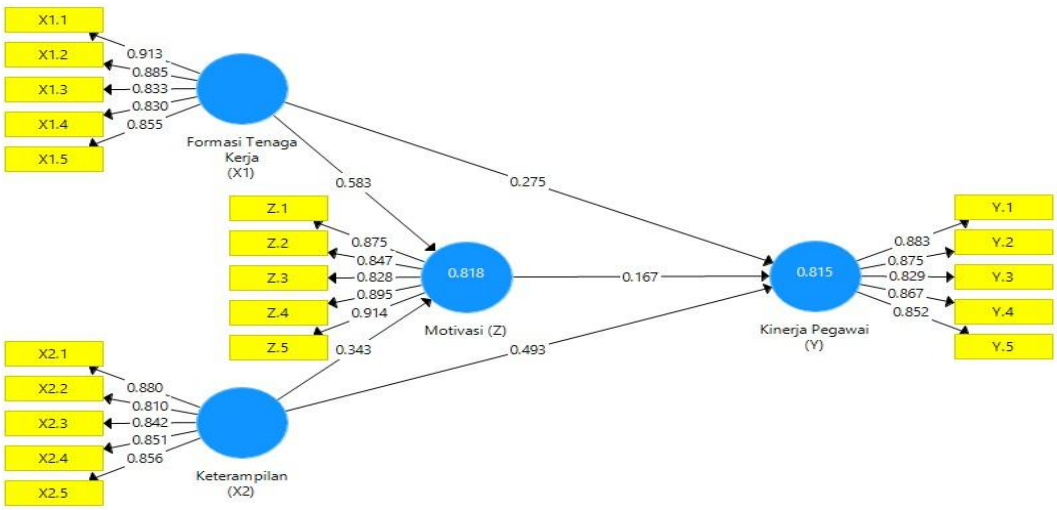

Figure 2. Outer Model

Source: Smart PLS 3.3.3

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

For substructure 1

$Z = b1X1 + b2X2 + e1$

$Z = 0,583 + 0,343 + e1$

For substructure 2

$Y = b3X1 + b4X2 + b5Z + e2$

$Y = 0,275 + 0,493 + 0,167 + e2$

Table 1. Outer Loadings

	Workforce Formation_(X1)_	Skills_(X2)	Employee Performance_(Y)	Motivation (Z)
X1.1	0,913			
X1.2	0,885			
X1.3	0,833			
X1.4	0,830			
X1.5	0,855			
X2.1		0,880		
X2.2		0,810		
X2.3		0,842		
X2.4		0,851		
X2.5		0,856		
Y.1			0,883	
Y.2			0,875	
Y.3			0,829	
Y.4			0,867	
Y.5			0,852	
Z.1				0,875
Z.2				0,847
Z.3				0,828
Z.4				0,895
Z.5				0,914

Source: Smart PLS 3.3.3

Table 1 shows that all indicators for the variables Workforce Formation (X1), Skills (X2), Employee Performance (Y), and Motivation (Z) have outer loading values above 0.70. This indicates that each indicator is able to reflect its construct well, so all indicators are declared valid and suitable for use in further model testing.

Discriminat Validity

The next step is to determine data validity through Discriminant Validity, aiming to find out whether the cross-loading value is greater than other latent variables, thus determining that the indicator correlates highly with its construct. The following table shows the cross-loading results from the validity test:

Table 2. Discriminant Validity

	Workforce Formation_(X1)_	Skills_(X2)	Employee Performance_(Y)	Motivation (Z)
X1.1	0,913	0,829	0,790	0,817
X1.2	0,885	0,807	0,821	0,818
X1.3	0,833	0,742	0,765	0,733
X1.4	0,830	0,741	0,683	0,747
X1.5	0,855	0,773	0,677	0,730
X2.1	0,786	**0,880**	0,796	0,713
X2.2	0,742	**0,810**	0,772	0,726
X2.3	0,774	**0,842**	0,751	0,760
X2.4	0,766	**0,851**	0,695	0,744
X2.5	0,755	**0,856**	0,738	0,739
Y.1	0,709	0,740	**0,883**	0,672
Y.2	0,730	0,740	**0,875**	0,768
Y.3	0,780	0,763	**0,829**	0,752
Y.4	0,760	0,758	**0,867**	0,685
Y.5	0,754	0,807	**0,852**	0,736
Z.1	0,779	0,802	0,695	**0,875**
Z.2	0,743	0,715	0,646	**0,847**
Z.3	0,735	0,681	0,701	**0,828**
Z.4	0,815	0,769	0,817	**0,895**
Z.5	0,813	0,815	0,790	**0,914**

Source: Smart PLS 3.3.3

Table 2 shows that all indicators for the variables Workforce Formation (X1), Skills (X2), Employee Performance (Y), and Motivation (Z) have outer loading values above 0.70. This indicates that each indicator is able to reflect its construct well, so all indicators are declared valid and suitable for use in further model testing.

Composite reliability

In this study, composite reliability is used to see each variable's reliability value. If the variable's value is greater than 0.60, the research is considered reliable. If it is below 0.60 and 0.7, it is not reliable. There are several blocks to determine whether the research is reliable or not and valid or not, including Cronbach's alpha value, composite reliability, and AVE value, as seen in the table below:

Table 3. Construct Reliability and Validity

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Workforce Formation_(X1)_	**0,915**	**0,936**	**0,746**
Skills_(X2)	**0,902**	**0,928**	**0,719**

Employee Performance_(Y)	**0,913**	**0,935**	**0,742**
Motivation (Z)	**0,921**	**0,941**	**0,761**

Source: Smart PLS 3.3.3

Table 3 shows that all constructs have Cronbach's Alpha and Composite Reliability values above 0.70 and AVE values above 0.50. These results indicate that the research instrument has met the criteria for reliability and convergent validity, so the constructs of Workforce Formation, Skills, Employee Performance, and Motivation are declared reliable and suitable for use in further analysis.

Inner Model Analysis

Evaluation of the structural model (inner model) is carried out to ensure the built structural model is robust and accurate. The analysis stages performed in evaluating the structural model are seen from several indicators:

Coefficient of Determination (R2)

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

Table 4. R Square Results

	R Square	**Adjusted R Square**
Employee Performance_(Y)	0,815	0,810
Motivation (Z)	0,818	0,814

Source: Smart PLS 3.3.3

Table 4 shows that the R Square value for the Employee Performance (Y) variable is 0.815 and for Motivation (Z) is 0.818. This means that the independent variables in the model are able to explain 81.5% of the variation in Employee Performance and 81.8% of the variation in Motivation, while the remainder is explained by factors outside the model. The high Adjusted R Square value also indicates that the model has a strong and good explanatory capability.

Hypothesis Testing

Hypothesis testing in this study was conducted by looking at T-Statistics and P-Values. A hypothesis is stated as accepted if the T-Statistics value > 1.96 and P-Values < 0.05. The following are the results of Path Coefficients for direct effects:

Table 5. Path Coefficients (Direct Effects)

	Original Sample (O)	**T Statistics (| O/STDEV |)**	**P Values**	**Results**
Workforce Formation_(X1)_ -> Employee Performance_(Y)	0,275	2,304	**0,011**	**Accepted**
Workforce Formation_(X1)_ -> Motivation (Z)	0,583	6,370	**0,000**	**Accepted**

Skills_(X2) -> Employee Performance_(Y)	0,493	4,349	**0,000**	**Accepted**
Skills_(X2) -> Motivation (Z)	0,343	3,717	**0,000**	**Accepted**
Motivation (Z) -> Employee Performance_(Y)	0,167	1,706	**0,044**	**Accepted**

Source: Smart PLS 3.3.3

1. Effect of Workforce Formation on Employee Performance, The test results show that Workforce Formation has a positive and significant effect on Employee Performance, with a coefficient value of 0.275, T-statistic 2.304, and p-value 0.011. Thus, the first hypothesis is accepted, meaning the better the workforce formation, the higher the employee performance.
2. Effect of Workforce Formation on Motivation, Workforce Formation is proven to have a positive and significant effect on Motivation, indicated by a coefficient value of 0.583, Tstatistic 6.370, and p-value 0.000. Therefore, the second hypothesis is accepted, indicating that proper workforce formation can increase employee motivation.
3. Effect of Skills on Employee Performance, Analysis results show that Skills have a positive and significant effect on Employee Performance, with a coefficient value of 0.493, T-statistic 4.349, and p-value 0.000. Thus, the third hypothesis is accepted, meaning improvement in employee skills will directly impact performance improvement.
4. Effect of Skills on Motivation, Skills also have a positive and significant effect on Motivation, with a coefficient value of 0.343, T-statistic 3.717, and p-value 0.000. This result shows that the fourth hypothesis is accepted, affirming that good skills can encourage employee work motivation.
5. Effect of Motivation on Employee Performance, Motivation has a positive and significant effect on Employee Performance, with a coefficient value of 0.167, T-statistic 1.706, and pvalue 0.044. Thus, the fifth hypothesis is accepted, meaning the higher the work motivation, the higher the employee performance.

Table 6. Path Coefficients (Indirect Effects)

	Original Sample (O)	**T Statistics (| O/STDEV |)**	**P Values**	**Results**
Workforce Formation_(X1)_ -> Motivation (Z) -> Employee Performance_(Y)	0,097	1,604	**0,055**	**Rejected**
Skills_(X2) -> Motivation (Z) -> Employee Performance_(Y)	0,057	1,552	**0,061**	**Rejected**

Source: Smart PLS 3.3.3

6. Effect of Workforce Formation on Employee Performance through Motivation, The test results show that the indirect effect of Workforce Formation on Employee Performance through Motivation has a coefficient value of 0.097 with a T-statistic of 1.604 and p-value 0.055. Because the p-value is greater than 0.05, the effect is not significant, so the hypothesis is rejected. This indicates that Motivation is not yet able to mediate the effect of Workforce Formation on Employee Performance.
7. Effect of Skills on Employee Performance through Motivation, Analysis results show that the indirect effect of Skills on Employee Performance through Motivation has a coefficient

value of 0.057 with a T-statistic of 1.552 and p-value 0.061. The p-value greater than 0.05 indicates that the effect is not significant, so the hypothesis is rejected. Thus, Motivation does not yet act as a mediating variable in the relationship between Skills and Employee Performance.

Conclusion

1. Workforce Formation on Employee Performance, Workforce Formation has a positive and significant effect on Employee Performance.
2. Workforce Formation on Motivation, Workforce Formation has a positive and significant effect on employee Motivation.
3. Skills on Employee Performance, Skills have a positive and significant effect on Employee Performance.
4. Skills on Motivation, Skills have a positive and significant effect on employee Motivation.
5. Motivation on Employee Performance: Motivation has a positive and significant effect on Employee Performance.
6. Mediation of Motivation on Workforce Formation and Employee Performance, Motivation does not mediate the effect of Workforce Formation on Employee Performance.
7. Mediation of Motivation on Skills and Employee Performance, Motivation does not mediate the effect of Skills on Employee Performance.

Suggestions

1. For Management, Organizational leadership is advised to continue improving workforce formation through employee placement that matches competencies and workload so that employee performance can be more optimal.
2. Improving Employee Skills, The organization needs to enhance employee skills through continuous training and development because skills have been proven to directly affect performance and motivation.
3. Strengthening Work Motivation, Although motivation does not act as a mediating variable, management still needs to pay attention to motivational factors through providing rewards, recognition, and a conducive work environment to support performance improvement.
4. For Future Researchers, Subsequent research is advised to add other variables, such as leadership, compensation, or work environment, and to use different research objects and methods so that the research results become more comprehensive.

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