

Effectiveness of Motivation through Leadership Style

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Abstract

This study aims to analyze the effect of information technology implementation and organizational culture on employee work motivation through leadership style in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra. This research employed a quantitative approach, with data collected through questionnaires. The sample consisted of 100 employees, selected using a census technique. Data analysis was conducted using Structural Equation Modeling based on Partial Least Squares (SEM-PLS). The results indicate that information technology implementation and organizational culture have a positive and significant effect on leadership style. Organizational culture and leadership style also have a positive and significant effect on employee work motivation. Meanwhile, information technology implementation does not have a direct significant effect on work motivation. However, leadership style is proven to mediate the effect of information technology implementation and organizational culture on employee work motivation. Therefore, leadership style plays a strategic role in enhancing employee motivation through effective information technology utilization and a strong organizational culture.

Keywords: Information Technology, Organizational Culture, Leadership Style, Work Motivation.

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Introduction

Optimal implementation of information technology not only impacts the quality of service but also enhances employee work motivation. Through faster, more accurate, and efficient work systems, employees can work more comfortably and productively. However, in reality, not all employees can quickly adapt to these technology-based system changes. Differences in digital capabilities, resistance to change, and lack of training can be obstacles affecting the level of employee work motivation in the organizational environment.

Besides information technology factors, organizational culture also plays an important role in influencing employee work motivation. A strong organizational culture, such as highly upheld values of integrity, professionalism, innovation, and excellent service. Strengthening organizational culture becomes one of the important factors in shaping positive and motivated work behavior. However, the success of information technology implementation and organizational culture strengthening is inseparable from the role of the leadership style applied in the organization. Leadership style is a key element that bridges the influence of these two factors on employee work motivation. Leaders who can act as motivators, communicators, and facilitators will find it easier to encourage employees to accept change, adapt to digital systems, and instill organizational values in every work activity. Conversely, authoritarian, uncommunicative, or non-participatory leadership styles can lower employee morale. High work motivation is very important for achieving optimal organizational performance. Employees with high work motivation will demonstrate better loyalty, dedication, and productivity.

Problem Formulation

1. Does Information technology implementation have a positive and significant effect on Employee work motivation in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra?
2. Does Organizational culture have a positive and significant effect on Employee work motivation in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra?
3. Does Information technology implementation have a positive and significant effect on Leadership style in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra?
4. Does Organizational culture have a positive and significant effect on Leadership style in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra?
5. Does Leadership style have a positive and significant effect on Employee work motivation in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra?
6. Does Information technology implementation have a positive and significant effect on Employee work motivation through Leadership style in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra?
7. Does Organizational culture have a positive and significant effect on Employee work motivation through Leadership style in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra?

Research Objective

1. To test and analyze the effect of Information technology implementation on Employee work motivation in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra.
2. To test and analyze the effect of Organizational culture on Employee work motivation in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra.

3. To test and analyze the effect of Information technology implementation on Leadership style in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra.
4. To test and analyze the effect of Organizational culture on Leadership style in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra.
5. To test and analyze the effect of Leadership style on Employee work motivation in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra.
6. To test and analyze the effect of Information technology implementation on Employee work motivation through Leadership style in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra.
7. To test and analyze the effect of Organizational culture on Employee work motivation through Leadership style in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra.

Work Motivation

According to Hasibuan (2016) Work motivation is the provision of driving force that creates a person's work spirit to be willing to cooperate, work effectively, and integrate with all efforts to achieve satisfaction and organizational goals. According to Robbins and Coulter (2016) work motivation is a series of internal and external drives that generate enthusiasm and persistence of a person to achieve predetermined work goals.

Work Motivation Indicators

Indicators according to Hasibuan (2016) are as follows:

1. Need for achievement.
2. Need for recognition.
3. Need for responsibility.
4. Need for career advancement.
5. Satisfaction with work results.

Information Technology Implementation

According to Jogyanto (2016) Information technology implementation is the process of using computer-based systems in organizational activities to increase operational efficiency, productivity, and service quality to internal and external users. According to Sutabri (2016) Information technology is a set of tools and methods used to collect, process, store, and disseminate information to support decision-making processes and increase work effectiveness in organizations.

Information Technology Indicators

Indicators according to Sutabri (2016) are as follows:

1. Technology suitability to work needs.
2. Ease of access and system use.
3. Speed and accuracy in data processing.
4. Security and reliability of information systems.
5. Technology support for improving employee performance.

Organizational Culture

According to Luthans (2016) Organizational culture is a set of basic assumptions, values, and beliefs developed in an organization as a guide for members in thinking, acting, and interacting to achieve common goals. According to Robbins and Judge (2016) Organizational culture is a system of shared meaning held by members of an organization that distinguishes that organization from others, encompassing values, norms, beliefs, and ways of acting that guide member behavior.

Organizational Culture Indicators

Indicators according to Robbins & Judge (2016) are as follows:

1. Innovation and risk-taking.
2. Attention to detail.
3. Outcome orientation.
4. People orientation.
5. Team orientation.
6. Stability and consistency of values.

Leadership Style

According to Daft (2016) Leadership style is the approach and manner used by a leader in directing, motivating, and controlling organization members to achieve optimal work results. According to Yukl (2016) Leadership style is a consistent pattern of behavior shown by a leader when influencing subordinates to achieve organizational goals.

Leadership Style Indicators

Indicators according to Yukl (2016) are as follows:

1. Ability to communicate with subordinates.
2. Ability to provide motivation and direction.
3. Participative decision-making.
4. Ability to set an example.
5. Provision of feedback and recognition for work results.

Conceptual Framework

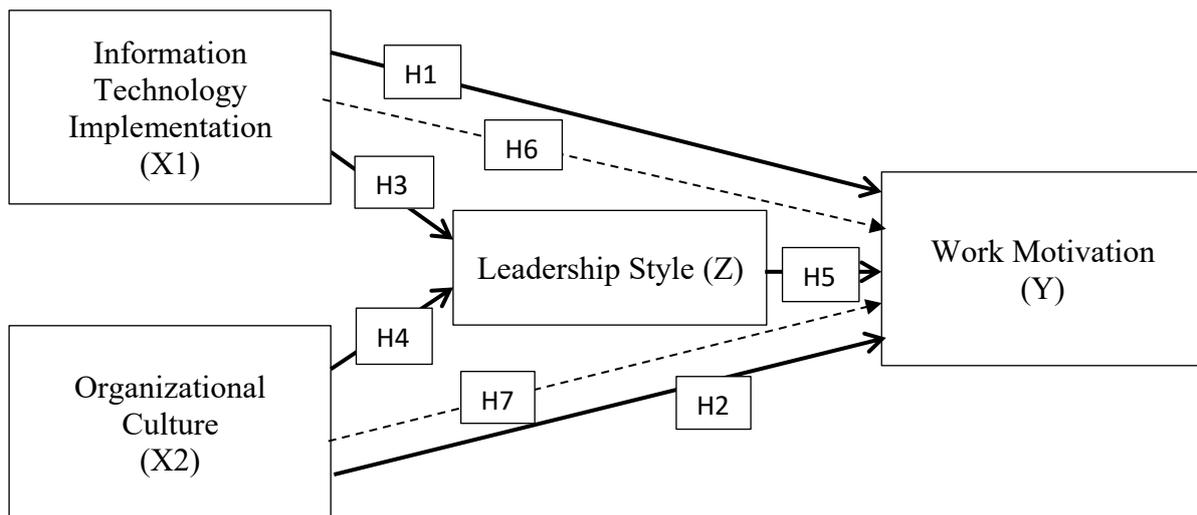


Figure 1. Conceptual Framework

Research Hypotheses

- H1 Information technology implementation has a positive and significant effect on Employee work motivation in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra.
- H2 Organizational culture has a positive and significant effect on Employee work motivation in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra.
- H3 Information technology implementation has a positive and significant effect on Leadership style in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra.

- H4 Organizational culture has a positive and significant effect on Leadership style in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra.
- H5 Leadership style has a positive and significant effect on Employee work motivation in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra.
- H6 Information technology implementation has a positive and significant effect on Employee work motivation through Leadership style in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra.
- H7 Organizational culture has a positive and significant effect on Employee work motivation through Leadership style in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra.

Type and Research Approach

According to Sugiyono (2016), quantitative research is research based on positivism philosophy, used to study specific populations or samples, data collection uses research instruments, data analysis is quantitative or statistical, with the aim of testing predetermined hypotheses.

Research Location and Time

This research was conducted at the Commercial and Customer Management Division of PT PLN (Persero) Main Distribution Unit North Sumatra, located in Medan, precisely at Jl. KL. Yos Sudarso No.284, Glugur Kota, Kecamatan. Medan Barat Kota Medan, North Sumatra 20238 (PLN UID North Sumatra Office). The research time was carried out during October to December 2025.

Research Population and Sample

According to Sugiyono (2016), population is the generalization area consisting of objects or subjects that have certain qualities and characteristics determined by the researcher to be studied and then conclusions are drawn. The population in this study were all employees working in the Commercial and Customer Management Division of PT PLN (Persero) UID North Sumatra, totaling 100 employees.

According to Sugiyono (2016), a sample is a part of the number and characteristics possessed by the population. The population used was 100 employees using a saturated sampling technique.

Data Type and Source

According to Sugiyono (2016), data sources consist of: Primary data, namely data obtained directly from respondents through questionnaire distribution. Secondary data, namely data obtained from documents, annual reports, and literature relevant to the research. This study uses primary data as the main source to measure employee perceptions of the research variables.

Data Collection Technique

According to Sugiyono (2016), a questionnaire is a data collection technique by giving a set of written questions or statements to respondents to answer.

Data Analysis Technique

According to Ghozali & Latan (2016), SmartPLS is software used to estimate Structural Equation Modeling (SEM) models based on components or variance.

Measurement Model Evaluation (Outer Model)

Evaluation is conducted through several tests, namely:

- a. Convergent Validity Test
- b. Discriminant Validity Test
- c. Construct Reliability Test

Structural Model Evaluation (Inner Model)

Evaluation is conducted through several steps as follows:

- a. Coefficient of Determination Test (R^2).
- b. Path Coefficient Value Test, to assess the direction and strength of relationships between constructs in the model.
- c. Predictive Relevance test (Q^2)
- d. Goodness of Fit (GoF)

Path Significance Test (Bootstrapping)

The final stage in analysis using SmartPLS is the bootstrapping process, a procedure to test the significance of relationships between latent variables. Through this technique, t-statistic and p-value are obtained to determine whether the proposed hypotheses are accepted or rejected. A t-statistic value greater than 1.96 indicates a significant relationship at the 95% confidence level, while a p-value less than 0.05 indicates a significant influence between latent constructs.

Results

Analisis Outer Model

Convergent Validity

This test is seen from the loading factor with a threshold value of 0.7, and the threshold value of Average Variance Extracted (AVE) is 0.5. If above these values, it is said to be valid. This means the value for an indicator is said to be valid if the indicator explains its construct variable with a value > 0.7 . The structural model in this study is shown in the following figure:

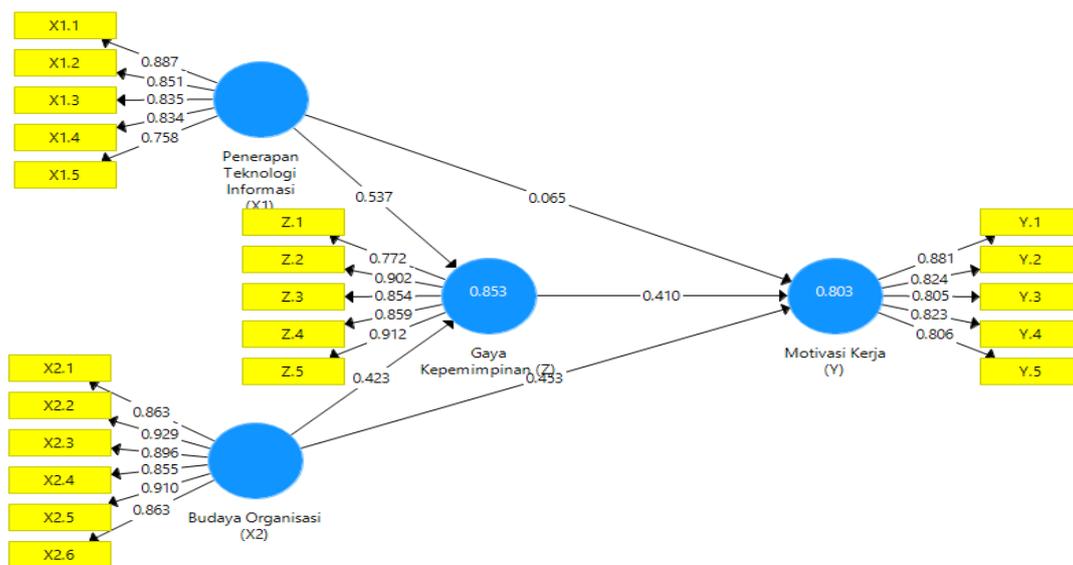


Figure 2. Outer Model

Source: Smart PLS 3.3.3

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

$$Z = b1X1 + b2X2 + e1$$

$$Z = 0,537 + 0,423 + e1$$

For substructure 2

$$Y = b_3X_1 + b_4X_2 + b_5Z + e_2$$

$$Y = 0,065 + 0,453 + 0,410 + e_2$$

Table 1. Outer Loadings

	Organizational Culture_(X2)	Leadership Style (Z)	Work Motivation_(Y)	Information Technology Implementation (X1)
X1.1				0,887
X1.2				0,851
X1.3				0,835
X1.4				0,834
X1.5				0,758
X2.1	0,863			
X2.2	0,929			
X2.3	0,896			
X2.4	0,855			
X2.5	0,910			
X2.6	0,863			
Y.1			0,881	
Y.2			0,824	
Y.3			0,805	
Y.4			0,823	
Y.5			0,806	
Z.1		0,772		
Z.2		0,902		
Z.3		0,854		
Z.4		0,859		
Z.5		0,912		

Source: Smart PLS 3.3.3

Based on Table 1, all indicators for the variables Information Technology Implementation (X1), Organizational Culture (X2), Work Motivation (Y), and Leadership Style (Z) have outer loading values above 0.70. This shows that each indicator is able to reflect its construct well, thus meeting convergent validity criteria and is suitable for further analysis.

Discriminat Validity

The next research is to determine data that is valid for Discriminant Validity, aiming to determine whether the cross loading value is greater than other latent variables, thus determining that indicators correlate highly with their constructs. The following table shows the cross loading results from the validity test as follows:

Table 2. Discriminant Validity

	Organizational Culture_(X2)	Leadership Style (Z)	Work Motivation_(Y)	Information Technology Implementation (X1)
X1.1	0,778	0,805	0,777	0,887
X1.2	0,696	0,696	0,668	0,851
X1.3	0,733	0,777	0,685	0,835
X1.4	0,655	0,800	0,649	0,834

X1.5	0,670	0,642	0,619	0,758
X2.1	0,863	0,787	0,708	0,713
X2.2	0,929	0,851	0,819	0,797
X2.3	0,896	0,831	0,870	0,867
X2.4	0,855	0,693	0,683	0,656
X2.5	0,910	0,768	0,773	0,741
X2.6	0,863	0,725	0,748	0,714
Y.1	0,825	0,849	0,881	0,775
Y.2	0,791	0,811	0,824	0,808
Y.3	0,627	0,633	0,805	0,529
Y.4	0,621	0,598	0,823	0,547
Y.5	0,688	0,642	0,806	0,661
Z.1	0,724	0,772	0,712	0,641
Z.2	0,807	0,902	0,801	0,755
Z.3	0,740	0,854	0,741	0,818
Z.4	0,688	0,859	0,685	0,761
Z.5	0,817	0,912	0,787	0,869

Source: Smart PLS 3.3.3

Based on Table 2, each indicator has the highest loading value on the construct it measures compared to other constructs. This shows that all variables, namely Organizational Culture (X2), Leadership Style (Z), Work Motivation (Y), and Information Technology Implementation (X1) have met discriminant validity criteria, so each construct can be well distinguished from one another.

Composite reliability

In research, composite reliability is used to see each variable with its reliability value. If the variable value is greater than 0.60, the research is considered reliable. If 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, among them are Cronbach's alpha value, composite reliability, and AVE value, which can be seen in the table below:

Table 3. Construct Reliability and Validity

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Organizational Culture_(X2)	0,945	0,956	0,786
Leadership Style (Z)	0,912	0,935	0,742
Work Motivation_(Y)	0,886	0,916	0,686
Information Technology Implementation (X1)	0,890	0,919	0,696

Source: Smart PLS 3.3.3

Based on Table 3, all constructs have Cronbach's Alpha and Composite Reliability values above 0.70 and AVE values above 0.50. This indicates that the variables Organizational Culture (X2), Leadership Style (Z), Work Motivation (Y), and Information Technology Implementation (X1) have met construct reliability and validity criteria, so the research instrument is declared reliable and suitable for further analysis.

Inner Model Analysis

Structural model evaluation (inner model) is conducted to ensure that the basic model created is strong and appropriate. The inspection stages carried out in the primary model assessment are seen from several markers, namely:

Coefficient of Determination (R²)

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

Table 4. R Square Results

	R Square	Adjusted R Square
Leadership Style (Z)	0,853	0,850
Work Motivation_(Y)	0,803	0,797

Source: Smart PLS 3.3.3

Based on Table 4, the R Square value for the Leadership Style (Z) variable is 0.853 with Adjusted R Square 0.850, indicating that 85.0% of the variation in leadership style can be explained by the independent variables in the model. Meanwhile, Work Motivation (Y) has an R Square value of 0.803 and Adjusted R Square 0.797, meaning that 79.7% of the variation in work motivation can be explained by the variables in the model, while the rest is influenced by other factors outside the research.

Hypothesis Testing

After assessing the inner model, the next step is to assess the connection between latent constructs as hypothesized in this review. Hypothesis testing in this review is done by looking at T-Statistics and P-Values. A hypothesis is declared accepted if the T-Statistic value > 1.96 and P-Values <0.05. The following are the results of the Path Coefficients for direct influence:

Table 5. Path Coefficients (Direct Effects)

	Original Sample (O)	T Statistics (O/STDEV)	P Values	Results
Organizational Culture_(X2) -> Leadership Style (Z)	0,423	5,490	0,000	Accepted
Organizational Culture_(X2) -> Work Motivation (Y)	0,453	5,332	0,000	Accepted
Leadership Style (Z) -> Work Motivation_(Y)	0,410	3,876	0,000	Accepted
Information Technology Implementation_(X1) -> Leadership Style (Z)	0,537	7,084	0,000	Accepted
Information Technology Implementation_(X1) -> Work Motivation (Y)	0,065	0,616	0,269	Rejected

Source: Smart PLS 3.3.3

1. The influence of Organizational Culture (X2) on Leadership Style (Z) The test results show that Organizational Culture (X2) has a positive and significant effect on Leadership Style (Z) with a coefficient value of 0.423, T-statistic 5.490, and p-value 0.000. Thus, the first hypothesis is accepted.
2. The influence of Organizational Culture (X2) on Work Motivation (Y) Organizational Culture (X2) is proven to have a positive and significant effect on Work Motivation (Y),

shown by a coefficient of 0.453, T-statistic 5.332, and p-value 0.000. Therefore, the second hypothesis is accepted.

3. The influence of Leadership Style (Z) on Work Motivation (Y) The analysis results show that Leadership Style (Z) has a positive and significant effect on Work Motivation (Y) with a coefficient of 0.410, T-statistic 3.876, and p-value 0.000. Thus, the third hypothesis is accepted.
4. The influence of Information Technology Implementation (X1) on Leadership Style (Z) Information Technology Implementation (X1) has a positive and significant effect on Leadership Style (Z), with a coefficient of 0.537, T-statistic 7.084, and p-value 0.000. Therefore, the fourth hypothesis is accepted.
5. The influence of Information Technology Implementation (X1) on Work Motivation (Y) The test results show that Information Technology Implementation (X1) does not have a significant effect on Work Motivation (Y), shown by a coefficient of 0.065, T-statistic 0.616, and p-value 0.269 (> 0.05). Thus, the fifth hypothesis is rejected.

Table 6. Path Coefficients (Indirect Effects)

	Original Sample (O)	T Statistics (O/STDEV)	P Values	Results
Organizational Culture (X2) -> Leadership Style (Z) -> Work Motivation (Y)	0,174	3,063	0,001	Accepted
Information Technology Implementation (X1) -> Leadership Style (Z) -> Work Motivation (Y)	0,220	3,442	0,000	Accepted

Source: Smart PLS 3.3.3

6. The influence of Organizational Culture (X2) on Work Motivation (Y) through Leadership Style (Z) The test results show that Organizational Culture (X2) has a positive and significant effect on Work Motivation (Y) through Leadership Style (Z). This is shown by a coefficient value of 0.174, T-statistic 3.063, and p-value 0.001 (< 0.05). Thus, Leadership Style (Z) is able to mediate the influence of Organizational Culture (X2) on Work Motivation (Y), so the hypothesis is accepted.
7. The influence of Information Technology Implementation (X1) on Work Motivation (Y) through Leadership Style (Z) The analysis results show that Information Technology Implementation (X1) has a positive and significant effect on Work Motivation (Y) through Leadership Style (Z), with a coefficient of 0.220, T-statistic 3.442, and p-value 0.000. This confirms that Leadership Style (Z) acts as a mediating variable, so the hypothesis is accepted.

Conclusion

1. Organizational Culture (X2) has a positive and significant effect on Leadership Style (Z), so the hypothesis is accepted.
2. Organizational Culture (X2) has a positive and significant effect on Work Motivation (Y), so the hypothesis is accepted.
3. Leadership Style (Z) has a positive and significant effect on Work Motivation (Y), so the hypothesis is accepted.
4. Information Technology Implementation (X1) has a positive and significant effect on Leadership Style (Z), so the hypothesis is accepted.
5. Information Technology Implementation (X1) does not have a significant effect on Work Motivation (Y), so the hypothesis is rejected.
6. Organizational Culture (X2) has a positive and significant effect on Work Motivation (Y) through Leadership Style (Z), so the hypothesis is accepted.

7. Information Technology Implementation (X1) has a positive and significant effect on Work Motivation (Y) through Leadership Style (Z), so the hypothesis is accepted.

Suggestions

1. Organizational leaders need to strengthen positive and consistent organizational culture, as it has been proven able to shape effective leadership styles and increase employee work motivation.
2. Organizations are advised to develop adaptive, communicative, and participatory leadership styles to maximize employee work motivation.
3. Information technology implementation needs to be balanced with increased leadership capability, so that technology utilization is not only technical but also able to encourage work motivation through the role of leaders.
4. Further research is suggested to develop the model by adding other variables, such as job satisfaction, organizational commitment, or work discipline, to enrich the study of factors influencing work motivation.
5. Future research can use different methodological approaches, such as qualitative methods or mixed methods, to gain a deeper understanding of the role of leadership style as a mediating variable.
6. Subsequent researchers are also advised to expand the object and number of respondents so that the research results have stronger generalization power.

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