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Determination of Employee Performance: Effects of Technology, Work Environment and Leadership Style in Gas Distribution Service Companies in Bekasi City

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Abstract: In this research, the author will analyze how the work environment, leadership style and communication between employees can affect employee performance in one of the natural gas distribution service companies in Bekasi city. The purpose of this research is to determine the influence of the work environment, leadership style and communication between employees on employee performance. This study used quantitative methods. (Ali, 2013). The total population in this study was 107 people, with a sample of 100 people. Sampling in this study used purposed random sampling. Furthermore, the data used in this study is primary data, which is data obtained from questionnaires that have been given to employees in the company through google form. The results of this study are: 1) Information Technology affects Employee Performance; 2) The work environment affects Employee Performance; 3) Leadership style affects employee performance 4) Information Technology, Work Environment and Leadership Style together affect Employee Performance.

Keyword: Information Technology, Work Environment, Leadership Style, Employee Perfomance

INTRODUCTION

Modern industrial development, which involves humans as a resource and company asset, requires ways and methods to manage it. Good, effective and efficient management will be able to support company operations. In order for a company to operate well, cooperation between managers and the resources they manage is needed.

In today's modern industrial climate, everything requires energy. Energy can move all sectors of life. The industrial world in Indonesia is currently still very dependent on fossil energy, namely energy produced from mining in the form of hydrocarbon products. Even though the whole world has agreed on Net Zero Emissions by 2060, while it is still in this transition period, the use of fossil energy or hydrocarbon products still has a very large contribution.

According to data from the Ministry of Energy and Mineral Resources website on May 23 2023, which the author quotes in this article, the percentage of energy mix in Indonesia in 2022 is as follows: In 2022 the energy supply in Indonesia will be 1,739 million BOE. The primary energy mix is still dominated by coal at 42.38%, then petroleum at 31.40%, gas at 13.92% and EBT at 12.30%. From this data, gas use is quite significant, ranking third largest in the mix of primary energy use.

In this article, the author wants to analyze the performance of employees at a service company engaged in gas distribution in the city of Bekasi. In the author's observations, employee performance at this company cannot be stable every month. This can be known from the results of performance achievements which are evaluated and monitored every 3 months by the employing company. The employer as the asset owner provides direction and limits regarding the performance achievements that must be implemented, which are agreed upon by both parties in the form of a Service Level Agreement (SLA). The SLA in question is the level of performance achievement that has been agreed between the employer and the work implementer. If all types of work can be carried out 100% every month, with a non-achievement tolerance of 2%, then it is considered that the service company has been able to carry out the work well and can be paid 100% for its services. This 2% tolerance is related to things that are beyond the service company's ability to implement, for example related to weather or natural constraints which result in the inability to send customer usage data online and in real time. Please note that the service of sending gas usage data by customers is one of the SLAs that must be implemented and fulfilled by the service company to the work owner or asset owner. This is especially true for large customers in industrial areas who already use information technology to send customer usage data online with special equipment.

Below is a table of employee performance which is represented by achieving SLA every month and evaluation is carried out every 3 months (quarterly or quarterly).

Table 1. Operational SLA data

QUARTER	SLA
Q1_2022	98,654%
Q2_2022	98,669%
Q3_2022	99,443%
Q4_2022	98,992%
Q1_2023	98,956%
Q2_2023	99,240%
Q3_2023	99,285%
Q4_2023	99,157%

A company's performance cannot be separated from the performance of its employees. (Fauzi A, 2022) Based on monitoring in the field, employee performance can be influenced by many factors. Among the factors that are thought to influence employee performance include communication, leadership style, motivation, company culture, individual abilities, rewards, stress and so on. (Colquitt et al., 2023)

Based on the background of the problem above, in this article the problem formulation is determined as follows: 1) Does information technology affect employee performance?; 2) Does the work environment influence employee performance?; 3) Does leadership style influence employee performance?; 4) Do information technology, work environment and leadership style influence employee performance?

METHOD

The technique or method that the author uses in this research is quantitative. The samples taken from the population in this study were 107 people with a sample size of 100 people. The sampling technique used was purposeful random sampling. The author obtained the data used in this research, namely primary data, which was obtained from questionnaires given to employees at PT. XYZ in the city of Bekasi. The scheme that the author uses in this research is Outer Model testing, Inner Model testing, hypothesis testing using the Structural Equation Model (SEM) – SmartPLS 3.0 (Ali, H., & Limakrisna, 2013).

RESULTS AND DISCUSSION

Results

The research results in this study were divided into two stages, including outer model testing and inner model testing.

Outer Test Measurement Model Validity Test Model

Testing the outer model in this research is by checking how well each statement given as a questionnaire reflects the variables studied. By using SmartPLS to analyze the outer model, there are two assessment processes that will be carried out, namely:

1. Convergent Validity

The resulting values that correspond to the results of inputting the factors in the latent variables including the indicators are presented with convergent validity. If the correlation coefficient is more than or equal to 0.7, then the single reflective measure is considered high. Initial studies show that a load measurement scale value of 0.5 to 0.6 is considered adequate (Ozili, 2022). The factor loading limit used in this research is > 0.7. There must be a strong correlation between the metrics of a construct.

Table 1. Data from Outer Model Analysis (Convergent Validity)

Indicator	Technology	Leadership Style	Work environment	Employee performance
T1	0,873057			
T2	0,888508			
T3	0,845395			
T4	0,848255			
T5	0,706516			
P1		0,87161		
P2		0,887557		
P3		0,930514		
P4		0,910996		
P5		0,937855		
P6		0,931465		
L1			0,844569	
L2			0,827041	
L3			0,80728	
L4			0,896492	
L5			0,846516	
L6			0,859861	
K1				0,706104
K2				0,742571
K3				0,841997
K4				0,835331
K5				0,839856
K6				0,870313

Source: SmartPLS 3.0 output

By reading the table data above, it shows that the 4 variables used in this research can be declared valid, because each indicator for each variable has a factor loading value of > 0.7, so it can be stated that the indicators for each variable meet the requirements for research (Maryanti et al., 2022).

2. Discriminant Validity

Discriminant validity testing was carried out using cross loading values and average variance extracted (AVE) values. The results of the cross loading value are used to find out whether the construct has adequate discriminant, namely by comparing the loading value for each indicator of each latent variable which must be greater (>) than the indicator value of the other variable. If the AVE value shows an AVE value greater than (>) 0.5, then it is said to meet the requirements. Measurements of different constructs should not be highly correlated (Fauzi, 2018).

Table 2. Outer Model Analysis Results Data (Cross Loading)

Indikator	Teknologi	Gaya Pemimpin	Lingkungan Kerja	Kinerja Karyawan
T1	0,873	0,477	0,556	0,633
T2	0,889	0,502	0,592	0,650
T3	0,845	0,406	0,567	0,563
T4	0,848	0,539	0,650	0,643
T5	0,707	0,377	0,515	0,507
P1	0,421	0,872	0,649	0,629
P2	0,443	0,888	0,651	0,658
P3	0,451	0,931	0,641	0,656
P4	0,533	0,911	0,674	0,689
P5	0,592	0,938	0,706	0,773
P6	0,575	0,931	0,716	0,735
L1	0,551	0,558	0,845	0,553
L2	0,625	0,533	0,827	0,584
L3	0,581	0,745	0,807	0,608
L4	0,567	0,583	0,896	0,641
L5	0,566	0,670	0,847	0,647
L6	0,621	0,656	0,860	0,706
K1	0,487	0,460	0,381	0,706
K2	0,497	0,519	0,338	0,743
K3	0,704	0,616	0,756	0,842
K4	0,574	0,660	0,707	0,835
K5	0,599	0,640	0,617	0,840
K6	0,607	0,741	0,675	0,870

Source: SmartPLS 3.0 output

By reading the table above, it can be seen that the comparison of factor loading values for technology (T1) is 0.873, which is greater than the factor loading values of other constructs, namely leadership style (0.477), work environment (0.556), and employee performance (0.633). By looking at the results of the discriminant validity test above, it can be seen that all latent variables already have good discriminant validity. So it can be concluded that the discriminant validity test has been fulfilled, and can be declared valid.

3. Average Variance Extracted

Latent variables can explain on average more than half of the variance of the indicators.

Table 3. Data from Outer Model Analysis (AVE)

Variabel	Average Variance Extracted (AVE)

Technology	**0,697**
Leadership Style	**0,832**
Work environment	**0,718**
Performance Technology	**0,653**

Source: SmartPLS 3.0 output

By reading the table above, it can be seen that the AVE value of the technology variable is 0.697, leader style 0.832, work environment 0.718 and employee performance 0.653. This shows that the four variables in this study have a value of more than 0.5, meaning that each variable has good discriminant validity.

Reliability Test

Reliability testing is intended to measure how accurate the consistency of respondents' answers is in filling out the questionnaire, according to the questions asked (Fauzi et al., 2022). There are 2 ways to do this test, namely:

1. Composite Reliability

The results of the composite reliability value can be found by looking at the composite reliability value in the construct reliability and validity menu. A construct is said to be reliable if its composite reliability value is > 0.7. Below you can see the composite reliability values in the table: Hasil nilai *composite reliability* dapat diketahui dengan melihat nilai *composite reliability* pada menu konstruk reliability dan validitas. Suatu konstruk dikatakan reliabel jika nilai *composite reliability* nya > 0,7. Dibawah ini dapat dilihat nilai *composite reliability* pada tabel:

Table 4. Data Result of Construct Reliability and Validity Analysis (Composite Reliability)

Variabel	Composite Reliability
Technology	**0,920**
Leadership Style	**0,967**
Work environment	**0,939**
Performance	**0,918**

Source: SmartPLS 3.0 output

Based on the test results in the table above, the composite reliability value for the technology variable is 0.920, the composite reliability value for leader style is 0.967, the composite reliability value for the work environment is 0.939 and the composite reliability value for performance is 0.918, showing that the value of these four variables is greater (>) than 0.7, meaning all variables were declared reliable.

2. Cronbach's Alpha

Reliability testing with composite reliability can be strengthened with Cronbach's alpha. The variable assessment criteria is if the Cronbach's alpha value for each variable is > 0.7, then it can be declared reliable.

Table 5. Data from Construct Reliability and Validity Analysis (Cronbach's Alpha)

Variabel	Cronbach's Alpha
Technology	**0,890**
Leadership Style	**0,959**
Work environment	**0,921**
Performance	**0,894**

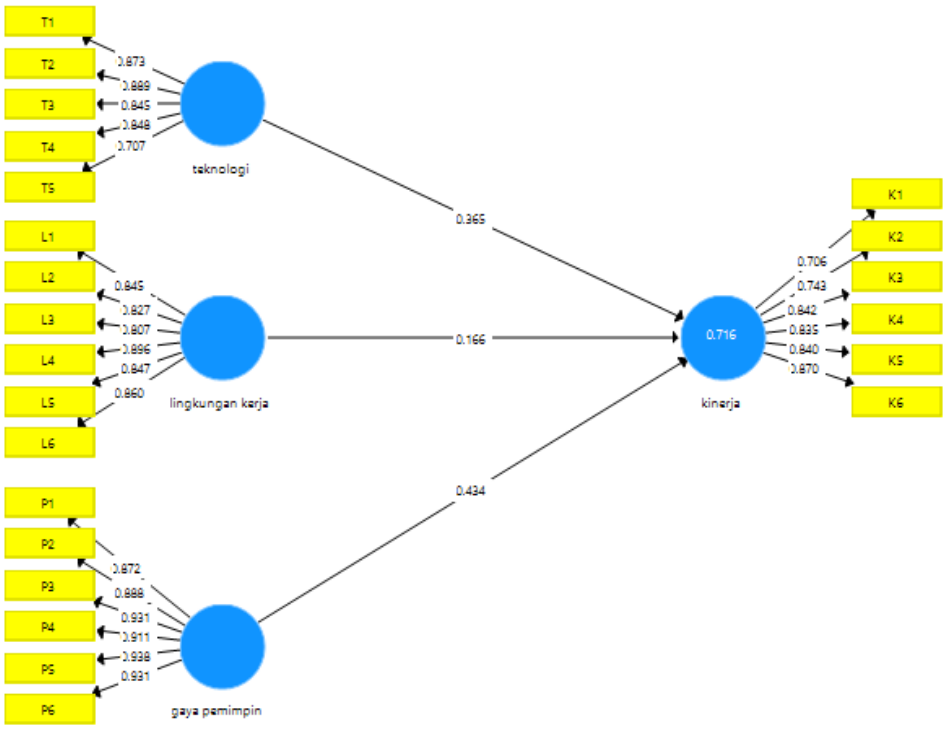
Source: SmartPLS 3.0 output

Based on the test results in the table above, the Cronbach's alpha value for the technology variable is 0.890, the Cronbach's alpha value for Leadership Style is 0.959, the

Cronbach's alpha value for the work environment is 0.815, and the Cronbach's alpha value for performance is 0.894. This shows that the value of these four variables is greater than 0.7, so the whole variable declared reliable (Fauzi et al., 2023).

Structural Model Analysis Results (Inner Model)

The results of testing the inner model or structural model are carried out by looking at the relationship or influence between constructs, significance values and R-Square (R2) from the research model carried out. Testing and measurements in this research used SmartPLS 3.0 which then formed the following picture:



Source: SmartPLS 3.0 output

Figure 1. Data from Structural Model Analysis Results

At this stage it is shown that to explain the strength of the relationship or influence of the independent latent variable on the dependent latent variable using a measurement standard 0.67 is declared a strong influence, 0.33 is declared a moderate influence, and 0.19 is declared a weak influence (Ozili, 2022). The table below is the result of R-Square estimation using SmartPLS:

Table 5. Data from Structural Model Analysis Results (R-Square)

Variabel	*R-Square*	*R-Square Adjusted*
Kinerja	0,716	0.707

Source: SmartPLS 3.0 output

Referring to the R-square data in the table above, it is known that the R-Square value of the performance variable is 0.716 (71.60%), this value is included in the strong measurement standard. Based on this, it is known that the magnitude of the influence of technology on employee performance is 71.60% (strong influence).

Hypothesis Testing Results (Significance Test)

The results of testing the structural relationship model are useful for explaining the relationship between variables. Structural model testing was carried out via the t test. In this research, direct hypothesis testing was carried out where the basis used was the values contained in the output path coefficients and indirect effects. Below is an explanation of hypothesis testing:

Table 6. Hypothesis Test Analysis Results Data (Path Coefficients)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
leader style -> performance	0,434	0,435	0,085	5,078	**0,000**
work environment -> performance	0,166	0,182	0,103	1,621	**0,106**
technology -> performance	0,365	0,351	0,088	4,149	**0,000**

Source: SmartPLS 3.0 output

Next, testing was carried out using the bootstrapping method on the sample. Testing using bootstrapping aims to minimize the problem of non-normality of research data. Test results data with boostrapping from PLS analysis are as follows:

1. The Influence of Leadership Style on Employee Performance

The data from the first hypothesis testing shows the influence of leadership style on employee performance, as seen in table 6. The results of the hypothesis test analysis show the value (O) where the path coefficient is 0.434 with a statistical T value of 5.078, this value is greater (>) than the t value table (1.96). This means that leadership style influences employee performance at company XYZ (**H1 Accepted**).

2. Influence of the Work Environment on Employee Performance

The data from the second hypothesis test shows the influence of the work environment on employee performance, as seen in table 6. The results of the hypothesis test analysis show the value (O) where the path coefficient is 0.166 with a T statistic value of 1.621, this value is smaller (<) than the t value table (1.96). This means that the work environment has no effect on employee performance at company XYZ (**H2 Rejected**).

3. The Effect of Technology on Employee Performance

The data from the third hypothesis test shows the influence of technology on employee performance, as seen in table 6. The results of the hypothesis test analysis show the value (O) where the path coefficient is 0.365 with a T statistic value of 4.149. This value is greater (>) than the t table value (1.983). This means that technology has a positive effect on employee performance at company XYZ (**H3 Accepted**).

Discussion

The Influence of Technology on Employee Performance

In the daily tasks carried out by company employees today, almost everything is inseparable from the use of technology. With technology, employees can enjoy their work very happily and comfortably, although this is rarely expressed. The role of technology is very helpful in every employee's work.

Technology that cannot be separated from the lives of employees today is information technology. Where every second, whatever happens in another location will quickly spread and be informed to people outside the area. With information technology, employees can easily communicate and exchange information to help complete their work. All information can be quickly conveyed without approaching each other or visiting friends' locations.

Based on the data from the first hypothesis testing, it shows the influence of technology on employee performance, as seen in table 6. The results of the hypothesis test analysis show the value (O) where the path coefficient is 0.434 with a T statistic value of 5.078. This value is greater (>) than the t table value (1.96). This means that technology has a significant effect on employee performance at company XYZ in Bekasi (**H1 Accepted**).

Technology influences employee performance, this is in line with research conducted by: 2021_the influence of Motivational Technology on Teacher Performance, n.d.; Head, n.d.; Suryantini et al., 2022).

The Influence of the Work Environment on Employee Performance

The work environment really determines the work atmosphere for employees. An uncomfortable working environment will feel disturbing for the employees who work there. For example, the work environment is stuffy, dirty, the temperature is hot, employees will respond with various kinds of actions. There are employees who cannot work in very hot room temperatures or environments, but there are also employees who are willing to work in environments with such hot temperatures. Either because I was forced to or because there was no other choice. If there is a more comfortable option, I think the employee will choose to work in a more comfortable environment.

If you look at the illustration above, it is possible that the work environment will influence how it works. Maybe he will use additional tools to continue working comfortably, or change his work method to work comfortably.

In Sarah's opinion (2021), "Employees are valuable assets that need to be cared for and nurtured well, so companies must pay attention to every detail of programs related to human resource development in order to produce employees who are competent and highly competitive." (Gultom et al., 2021).

Referring to the data from the results of testing the second hypothesis, it shows the influence of the work environment on employee performance, as seen in table 6. The results of the hypothesis test analysis show the value (O) where the path coefficient is 0.166 with a T statistic value of 1.621. This value is smaller (<) than the t table value (1.96). This means that the work environment does not have a positive effect on employee performance at XYZ company in Bekasi (**H2 Rejected**).

The work environment does not have a significant effect on employee performance, this is in line with research conducted by: (Agung & Arianto, 2013; Manikottama et al., 2019; Sabilalo et al., n.d.).

The Influence of Leadership Style on Employee Performance

In every company where there is interaction between leaders and employees, there will be different leadership styles. This leadership style can be seen from the way the leader interacts with his employees. There are leaders who always ask to be respected and every order must be carried out. There are leaders who can discuss with their employees at any time before making a decision. There are also leaders who follow the wishes of employees as long as the goal is for the betterment of the company. Each of these leadership characters has a different role in advancing the company's performance.

In some cases, an authoritarian leader is very necessary in advancing the company, because of his ability and character, as long as it is based on sincere good intentions for the progress of the company, for his personal interests. Sometimes leaders always ask for employees' opinions so that their company can progress and develop. In this research, the author will test whether it is true that leadership style has a positive effect on employee performance.

Referring to the data from the third hypothesis testing, it shows the influence of leadership style on employee performance, as seen in table 6. The results of the hypothesis test

analysis show the (O) value, where the path coefficient is 0.403 with a T statistic value of 5.078. This value is greater (>) than the t table value (1.983). This means that leadership style has a positive effect on employee performance at XYZ company in Bekasi (**H3 Accepted**).

Leadership style has a positive effect on employee performance, this is in line with research conducted by: (Depitra & Soegoto, 2018; Ida Farida & Makna Fauzi, 2020; Sinambela, 2021).

CONCLUSION

Referring to the results of the research and discussion that the author has conducted above, regarding "Determination of Employee Performance: The Effect of Technology, Work Environment and Leadership Style in Gas Distribution Service Companies in Bekasi City" the author can conclude that: 1) Technology influences employee performance; 2) The work environment has no effect on employee performance; 3) Leadership style influences employee performance.

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