Improving Employee Performance: Analysis of Determinant Factors Using Binary Logistic Regression

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Abstract

The purpose of this study was to analyze the factors that affect employee performance based on the work permit application system in the Information Technology Division of PT. XYZ using the binary logistic regression method. The population of the study was work permits downloaded from the company's work permit system as many as 10,000 sheets, with a sample of 760 work permits selected by simple random sampling. Data processing was carried out statistically through bivariate analysis, multivariate analysis, confounding test, and interaction test. Based on the Nagelkerke R Square test, a value of 0.426 was obtained, which means that the independent variables in the model are able to explain employee performance by 42.6%. The most dominant variable related to employee performance is the work team. Partial tests show that each independent variable such as type of problem, target completion time, and working time have a positive effect on the dependent variable, with a significance level of less than 0.05, thus supporting the hypothesis. However, for the work environment variable, the significance level is greater than 0.05, so the hypothesis is rejected. The results of the simultaneous test in the Omnibus Tests of Model Coefficient table show a significance value ($p < 0.001$), which means that the overall logistic regression model is statistically significant. This means that the hypothesis is accepted, which means that the type of problem, target completion time, work environment, and work team together have a significant influence on the likelihood of employee performance in the Information Technology Division of PT. XYZ Kediri.

Keywords: Binary logistic regression, Employee performance, Determinant factors, Work ticket

1. Introduction

In the era of Industry 4.0 transitioning to 5.0 in Indonesia, characterized by rapid technological advancements and a highly competitive global market, companies across all sectors face increasing pressure to enhance operational efficiency and productivity. One of the key aspects crucial to achieving these goals is employee performance. Employee performance evaluation plays a vital role in human resource management as it provides a clear understanding of individual contributions to organizational objectives and helps identify areas for further development.

Similarly, one of the tobacco manufacturing companies in Indonesia, established in 1958 in Kediri, East Java, has made significant contributions to employment. Along with its subsidiaries, the company provided jobs for 31,559 people by the end of 2022. The company believes that human resources are its most valuable asset, playing a crucial role in achieving business success and other corporate goals. Therefore, as part of its business strategy, the company implements a People Development program to enhance the capabilities of all employees. By growing together with its workforce, the company is confident in achieving excellence and establishing itself as one of the leading companies in the country.

To drive employee performance, the Information Technology Division at PT. XYZ, a company in the tobacco sector, has adopted a performance evaluation system based on a work ticket management system. The work ticket system is a structured management system designed to assist employees in handling customer needs, such as requests, inquiries, issues, or specific complaints, ensuring that the resolution process is easily traceable and completed within the designated timeframe. This approach helps improve work efficiency and customer satisfaction. Within this ticketing system, priority levels are assigned to tickets, allowing employees to resolve them based on their urgency. For instance, high-priority tickets must be completed first. The previous study, "Analysis of Employee Performance at the Regional Inspectorate of North Sulawesi Province After the Implementation of the Electronic Performance System (E-Kin)" (Saiyang et al., 2022), explains efforts to improve employee performance through a technology-connected system designed to measure and enhance the performance of government officials. However, its implementation has not yet fully met expectations, as efforts are still being made to establish clearer, more efficient, and effective performance benchmarks, which are monitored and supervised directly by superiors through the system.

The timely resolution of work tickets serves as a performance assessment criterion for the Information Technology Division. Each work ticket must be completed within the agreed-upon timeframe, as stipulated in the company's Service Level Agreement (SLA) Matrix document. Through this system, employees can record and track their achievements in real-time, providing a more accurate picture of both individual and team performance. The previous study, "Service time thresholds at barrier-operated freeway exit toll booths" (Aksoy, 2024), discusses service time based on vehicle classes at barrier-operated toll booths. Service time was measured using four vehicle classifications: cars (C), medium goods vehicles (MGV), trucks & buses (TB), and articulated trucks (AT), with two payment options: electronic toll collection (ETC) and manual toll collection (MTC). Logistic regression was used to calculate the service time thresholds for the shift from ETC to MTC for C, MGV, TB, and AT, which were 5.92, 7.51, 10.00, and 12.80 seconds, respectively. The transition time for vehicles switching from ETC to MTC, based on the logistic curve, is represented by the service time threshold. The results indicate that operators can benefit from more dynamic operational conditions facilitated by service time thresholds, allowing for adaptive and efficient toll booth operations. Furthermore, these thresholds can serve as valuable service quality metrics for managing freeway exit toll booths.

However, the effectiveness of this system in improving employee performance in PT. XYZ's Information Technology Division remains a critical question that needs to be addressed. According to the Key Performance Indicators (KPIs) of the Information Technology Division, the number of unresolved high-priority tickets (red tickets) should not exceed 5% of the total tickets in a given month. While many companies have adopted the work ticket system, there is still a need to comprehensively evaluate its effectiveness. The data below presents the work ticket system statistics for January 2024 in the Information Technology Division of PT. XYZ

Table 1 Work Ticket System Data for January 2023 Information Technology Division of PT. XYZ

Employee Performance	Amount	Percentage
Red Ticket	73	9,6
Green Ticket	690	90,4
Total	763	100,0

Source: Researcher Data

Therefore, it is important for the Information Technology Division to enhance productivity by reducing the number of red tickets generated. This should begin with identifying the factors that contribute to the low quality of the ticket resolution process, based on the resolution time matrix, which has not yet received sufficient attention from the Information Technology Division of PT. XYZ as the entity responsible for managing the ticketing system.

The main research question in this study is: Does performance evaluation using a work ticket system, which includes problem environment factors, problem types, resolution time targets, and work teams, affect employee performance? The objective of this study is to examine and analyze the influence of problem environment factors, problem types, resolution time targets, and work teams on employee performance through the work ticket system.

The results of this study are expected to provide theoretical benefits, such as serving as a basis for future research, a comparison with other studies, a contribution to knowledge, and an opportunity for the author to apply their knowledge. Furthermore, the expected practical benefits include improving the effectiveness of performance evaluation, enhancing employee performance, increasing competitiveness, as well as fostering innovation and continuous

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improvement. Thus, after considering the issues mentioned above, the researcher is interested in conducting a study titled "Improving Employee Performance: An Analysis of Determinant Factors Using Binary Logistic Regression."

2. Method

The type of research used in this study is quantitative research with the binary logistic regression method. Quantitative research emphasizes the measurement and analysis of numerical data to test hypotheses and draw generalizable conclusions. In this context, the study utilizes work ticket data downloaded from the company's ticketing system to analyze the factors influencing employee performance. The research population consists of 10,000 work tickets, with a sample of 760 work tickets selected using a random sampling technique.

The binary logistic regression method is a statistical technique used to model the relationship between a binary dependent variable employee performance, which has only two possible values (red ticket = 0 and green ticket = 1), and several independent variables. In this study, the independent variables are problem environment, problem type, resolution time target, and work team. The operational definitions of the independent and dependent variables are as follows:

Table 2 Indicators of Quantitative Data Variables

Variables	Code	Indicator	Code	Scale
Employee performance	KK	Tiket Merah,	0	Nominal Scale
		Tiket Hijau	1	Nominal Scale
Type of Problem	*JM*	*Software*	JM0	Nominal Scale
		Hardware	JM1	Nominal Scale
		Network	JM2	Nominal Scale
		Service	JM3	Nominal Scale
Environmental Problems	*LM*	*RO Jakarta*	LM0	Nominal Scale
		RO Bandung	LM1	Nominal Scale
		RO Banjarmasin	LM2	Nominal Scale
		RO Denpasar	LM3	Nominal Scale
		RO Lampung	LM4	Nominal Scale
		RO Makassar	LM5	Nominal Scale
		RO Manado	LM6	Nominal Scale
		RO Medan	LM7	Nominal Scale
		RO	LM8	Nominal Scale

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Variables	Code	Indicator	Code	Scale
		Palembang RO		
		Pekanbaru RO	LM9	Nominal Scale
		Semarang RO	LM10	Nominal Scale
		Surabaya	LM11	Nominal Scale
Target Completion Time	*TWP*	*Low*	TWP0	Nominal Scale
		Medium	TWP1	Nominal Scale
		High	TWP2	Nominal Scale
		Critical	TWP3	Nominal Scale
Work Team	*TP*	*IT Information System*	TP0	Nominal Scale
		IT Support	TP1	Nominal Scale
		IT Intranet	TP2	Nominal Scale
		IT Asset	TP3	Nominal Scale
		IT Helpdesk	TP4	Nominal Scale
		IT Network	TP5	Nominal Scale
		IT Operation	TP6	Nominal Scale
		IT Sysadmin	TP7	Nominal Scale

Source: Researcher Data

This study also involves several types of statistical tests, including:

1. Bivariate test: A statistical test used to examine the relationship between two variables separately. In this study, the bivariate test is used to assess the relationship between each independent variable and the dependent variable.
2. Multivariate test: A statistical test used to analyze the relationship between multiple independent variables simultaneously and the dependent variable. In this study, the multivariate test is used to examine how problem environment, problem type, resolution time target, and work team collectively influence employee performance.
3. Confounding test: A statistical test used to control the influence of confounding variables, which are variables that affect both the independent and dependent variables. In this study, the confounding test is used to ensure that the observed relationship between independent and dependent variables is not influenced by other unexamined factors.
4. Interaction test: A statistical test used to determine whether there is an interaction between independent variables in influencing the dependent variable. In this study, the interaction test is used to analyze whether there is an interaction between problem environment, problem type, resolution time target, and work team in affecting employee performance.

By using the binary logistic regression method and various statistical tests, this study aims to identify the most important determinant factors in improving employee performance based on the work ticket application system in the Information Technology Division of PT. XYZ.

3. Results

3.1 Validity Test Results

In the context of logistic regression with categorical and nominal scale variables, validity and reliability tests may not always be necessary or relevant. However, conducting these tests still holds value and can provide additional insights into the quality of the data and measurement instruments. A more relevant general approach is to ensure that the independent variables have predictive validity in forecasting the dependent variable. Predictive validity measures the extent to which the logistic regression model can accurately predict the outcome or category of the dependent variable based on the independent variables. The steps for conducting a predictive validity test in SPSS are as follows:

Table 3Table Classification

Observed		KK 0	1	*Percentage Correct*
KK	0	5	68	6.8
	1	6	684	99.1
Overall Percentage				90.3

Source: Data Processing

From the Classification Table, it can be seen that the logistic regression model has an overall accuracy of 90.3% (Overall Percentage), which is quite high, indicating that the model generally predicts well. Accuracy for category 1= 99.1% Very good, the model is almost always correct in predicting category 1. Accuracy for category 0= 6.8%. The model fails to predict most cases in category 0. Furthermore, it is recommended to use the AUC-ROC Curve to assess the overall quality of the model.

Table 4 Table AUC-ROC Curve

Area Under the Curve
Test Result Variable(s): Predicted probability
Area
.902
The test result variable(s): Predicted probability has at least one tie between the positive actual state group and the negative actual state group. Statistics may be biased.

Source: Data Processing

An AUC value of 0.902 indicates that the logistic regression model has excellent performance in distinguishing between the positive class (1) and the negative class (0).

Table 5 Table Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	4.394	8	.820

Source: Data Processing

Interpretation of the Significance Value (p-value = 0.820), The null hypothesis (H_0) of the Hosmer-Lemeshow test states that there is no significant difference between the model's predicted values and the actual data (meaning the model has a good fit). Since p-value = 0.820 > 0.05, H_0 is not rejected, indicating that the model is considered good at predicting the data and does not have a goodness-of-fit issue.

3.2 Reliability Test Results

Reliability in binary logistic regression refers more to the stability and consistency of the model. There are several ways to evaluate the consistency and stability of the model, including Goodness-of-Fit Test, Prediction Accuracy (Classification Table), ROC Curve and AUC (Area Under the Curve, Multicollinearity. Points 1, 2, and 3 have already been explained in the validity test. This section will focus on checking for multicollinearity in the data using VIF (Variance Inflation Factor) and Tolerance values. Interpretation of results If Tolerance < 0.1 or VIF > 10, there is an indication of multicollinearity. If Tolerance > 0.1 and VIF < 10, serious multicollinearity is not present.

3.3 Regression Test

3.3.1 Regression 1: LM_0 as Dependent. JM_0, TWP_0, and TP_0 as predictors.

Table 6 Coefficients Table When LM_0 is the Dependent Variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	5.140	.381		13.495	.000		
	JM_0	.131	.152	.037	.862	.389	.703	1.423
	TWP_0	-.233	.171	-.050	-1.368	.172	.957	1.044
	TP_0	.247	.075	.138	3.272	.001	.724	1.382

Source: Data Processing

The Tolerance values for all independent variables are above 0.1, and the VIF values are below 10. This indicates that there is no serious multicollinearity issue in the model.

3.3.2 Regression 2: JM_0 as Dependent. LM_0, TWP_0, and TP_0 as predictors.

Table 7 Coefficients Table When JM_0 is the Dependent Variable

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.796	.097		8.203	.000		
TWP_0	.194	.040	.148	4.828	.000	.984	1.016
TP_0	.254	.016	.504	16.267	.000	.963	1.039
LM_0	.007	.009	.027	.862	.389	.975	1.025

Source: Data Processing

The Tolerance values for all independent variables are greater than 0.1, and the VIF values are less than 10. This indicates that there is no serious multicollinearity issue in the model.

3.3.3 Regression 3: TWP_0 as Dependent. LM_0, JM_0, and TP_0 as predictors.

Table 8 Coefficients Table When TWP_0 is the Dependent Variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.172	.079		14.753	.000		
	TP_0	.007	.016	.018	.429	.668	.714	1.401
	LM_0	-.011	.008	-.049	-1.368	.172	.977	1.024
	JM_0	.154	.032	.201	4.828	.000	.724	1.382

Source: Data Processing

The Tolerance values for all independent variables are above 0.1, and the VIF values are below 10. This indicates that there is no serious multicollinearity issue in the model.

3.3.4 Regression 4: TP_0 as Dependent. LM_0, JM_0, and TWP_0 as predictors.

Table 9 Coefficients Table When TP_0 is the Dependent Variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.344	.197		6.834	.000		
	LM_Ref	.056	.017	.101	3.272	.001	.988	1.012
	JM_REF	1.017	.063	.513	16.267	.000	.947	1.056
	TWP_Ref	.035	.082	.013	.429	.668	.955	1.047

Source: Data Processing

The Tolerance values for all independent variables are greater than 0.1, and the VIF values are less than 10. This indicates that there is no serious multicollinearity issue in the model.

3.4 Bivariate Analysis

To determine the relationship between the dependent variable (employee performance) and the independent variables (work environment, problem type, resolution time target, and work team), a bivariate analysis is conducted. If the p-value < 0.25, the variable can be included in the multivariate model for interaction testing and confounding testing. The following are the p-values obtained from the bivariate analysis using simple logistic regression, with the results as follows:

Table 10 Overall p-Value of Independent Variables Against Dependent Variables in Bivariate Analysis

Variable	**Pvalue**	**Bivariate test results**
Environmental Problems	0.656	Not Significant
Type of Problem	0.001	Significant
Target Completion Time	0.015	Significant
Work Team	0.001	Significant

Source: Data Processing

Based on the selection results, it was found that the variables problem type, resolution time target, and work team had a p-value < 0.25, so these variables will be included in the multivariate analysis for interaction testing and confounding testing. Meanwhile, the work environment variable had a p-value > 0.25. However, to achieve the research objective of understanding all potential factors influencing the dependent variable, and considering possible interactions or confounding effects, non-significant variables in bivariate analysis may become significant when tested in a multivariate model due to interactions with other variables or acting as a confounder. Therefore, this variable is still included in the multivariate modeling process.

3.5 Multivariate Analysis

After identifying candidate variables for multivariate analysis, the next step is to conduct the multivariate analysis by examining the relationship between the dependent variable (employee performance) and all independent variables (work environment, problem type, resolution time target, and work team).

3.5.1 First Stage Multivariate Modeling

Table 11 First Stage Multivariate Modeling Results Table

Variable	P Value	OR Exp(B)	Multivariate test results
LM_0	0,574		Not Significant
LM_1	0,632	1,265	1,265
LM_2	0,844	1,126	1,126
LM_3	0,438	0,653	0,653
LM_4	0,267	2,544	2,544
LM_5	0,856	0,909	0,909
LM_6	0,592	1,498	1,498
LM_7	0,996	0,469	0,469
LM_8	0,506	0,565	0,565
LM_9	0,633	0,678	0,678
LM_10	0,052	4,904	4,904
LM_11	0,384	0,62	0,62
JM_0	0,34		Not Significant
JM_1	0,68	1,514	1,514
JM_2	0,141	1,859	1,859
JM_3	0,297	4,237	4,237
TWP_0	0,764		Not Significant
TWP_1	0,928	1,07	1,07
TWP_2	0,395	0,689	0,689
TWP_3	0,568	1,418	1,418
TP_0	0,004		Significant
TP_1	0,037	19,662	19,662
TP_2	0	61,847	61,847
TP_3	0,995	0,045	0,045
TP_4	0,101	4,467	4,467
TP_5	0,898	1,052	1,052

Variable	P Value	OR Exp(B)	Multivariate test results
TP_6	0,222	9,679	9,679
TP_7	0,042	18,539	18,539

Source: Data Processing

From the first-stage multivariate model assessment, several variables have a p-value > 0.005, namely work environment (0.574), problem type (0.340), and resolution time target (0.764). Therefore, the only variable that passed the first-stage multivariate modeling is work team, with a p-value of 0.004.

3.5.2 Second Stage Multivariate Modeling

In the second-stage multivariate analysis, independent variables with a p-value > 0.05 will be assessed to determine whether they act as confounding variables. This is done by removing each independent variable one by one and then calculating the difference in Odds Ratio (OR) (Exp(B)) before and after the variable is removed. The removal process starts with the variable that has the highest OR.

Table 12 Table of Changes in OR Values Before and After the Target Time to Completion (TWP) was Removed

Variable	OR value when there is a TWP variable	OR value when there is no TWP variable	OR Changes
LM_0			
LM_1	1,265	1,227	2,979447451
LM_2	1,126	1,061	5,79735141
LM_3	0,653	0,568	12,91522963
LM_4	2,544	2,442	3,991014696
LM_5	0,909	0,841	7,551107555
LM_6	1,498	1,384	7,56809673
LM_7	0,469	0,918	6,045447384
LM_8	0,565	0,484	14,25788962
LM_9	0,678	0,614	9,485235194
LM_10	4,904	4,478	8,683919311
LM_11	0,620	0,581	6,191938344
JM_0			
JM_1	1,514	1,484	2,001264626
JM_2	1,859	1,945	-4,629265812
JM_3	4,237	4,401	-3,873181319
TP_0			
TP_1	19,662	20,613	-4,840135871

Variable	OR value when there is a TWP variable	OR value when there is no TWP variable	OR Changes
TP_2	61,847	63,106	-2,035283053
TP_3	0,045	0,652	-7,192235993
TP_4	4,467	4,697	-5,143992958
TP_5	1,052	1,081	-2,8108624
TP_6	9,679	10,456	-8,027244791
TP_7	18,539	20,402	-10,05335747

Source: Data Processing

From Table 12 above, the change in the OR value for the problem environment (LM) variable before and after the target resolution time (TWP) variable was removed is greater than 10% (12.91% and 14.25%). Therefore, it can be concluded that the target resolution time (TWP) variable is a confounding variable and must be included back into the model.

Table 13 Table of Changes in OR Values Before and After the Problem Environment Variable (LM) was Removed

Variable	OR value when there is a LM variable	OR value when there is no LM variable	OR Changes
JM_0			
JM_1	1,514	1,714	-13,15056901
JM_2	1,859	1,587	14,64639195
JM_3	4,237	4,789	-13,03579688
TWP_0			
TWP_1	1,070	0,913	14,67998585
TWP_2	0,689	0,614	10,96868318
TWP_3	1,418	1,343	5,249803534
TP_0			
TP_1	19,662	14,544	26,03058974
TP_2	61,847	56,977	7,874538162
TP_3	0,045	0,326	31,53114842
TP_4	4,467	3,053	31,65824337
TP_5	1,052	1,203	-14,38654218
TP_6	9,679	9,024	6,766389676
TP_7	18,539	10,618	42,72292585

Source: Data Processing

From Table 13 above, it can be seen that the change in the OR value for the variable type of issue (JM), target completion time (TWP), and work team (TP) before and after the exclusion of the work environment (LM) variable is > 10%. Therefore, it can be concluded that the work environment (LM) variable is a confounding variable and must be reintroduced into the model.

Table 14 Table of Changes in OR Values Before and After the Problem Type (JM) Variable was Removed

Variable	OR value when there is a JM variable	OR value when there is no JM variable	OR Changes
LM_0			
LM_1	1,265	1,311	-3,635217967
LM_2	1,126	1,068	5,169805874
LM_3	0,653	0,641	1,771763678
LM_4	2,544	2,641	-3,794499198
LM_5	0,909	1,018	-11,92300194
LM_6	1,498	1,393	6,995420777
LM_7	0,469	0,464	1,047384273
LM_8	0,565	0,578	-2,337829066
LM_9	0,678	0,757	-11,59429145
LM_10	4,904	4,836	1,401402149
LM_11	0,620	0,652	-5,178634946
TWP_0			
TWP_1	1,070	1,038	2,958965099
TWP_2	0,689	0,682	0,993012417
TWP_3	1,418	1,677	-18,28613914
TP_0			
TP_1	19,662	31,375	-59,5778909
TP_2	61,847	58,337	5,675258992
TP_3	0,045	0,063	-42,27855408
TP_4	4,467	6,958	-55,76183763
TP_5	1,052	1,073	-2,077888013
TP_6	9,679	37,120	-283,5040317
TP_7	18,539	30,156	-62,66760213

Source: Data Processing

From Table 14 above, the change in the OR value for the problem environment (LM) variable and the work team (TP) variable before and after the problem type (JM) variable was removed is greater than 10%. Therefore, it can be concluded that the problem type (JM) variable is a confounding variable and must be included back into the model.

To understand all factors that may influence the dependent variable and potential interactions, an interaction estimation was conducted in this study between the significant variable (Work Team) and confounders (Problem Environment, Resolution Time Target, and Problem Type). The results are presented in the following table.

Table 15 Results of Multivariate Analysis with Interaction Variables

Variable	Sig.
TP_0	0,990
LM_0	0,691
TWP_0	0,711
JM_0	0,754
TP_0 * TWP_0	1,000
TP_0 * JM_0	1,000
TP_0 * LM_0	1,000

Source: Data Processing

All interactions have a p-value of 1.000, which means there is no significant interaction. This indicates that the combination of TP_0 and other variables has no meaningful effect in the model.

3.5.3 Third Stage Multivariate Modeling

Table 16 Final Model Results of Multivariate Analysis

Variable	P Value	OR Exp(B)	Results
TP_0	0,004		Significant Variables
TP_1	0,037	19,662	
TP_2	0,000	61,847	
TP_3	0,995	0.612	
TP_4	0,101	4,467	
TP_5	0,898	1,052	
TP_6	0,222	9,679	
TP_7	0,042	18,539	
TWP_0	0,764		Confounding Variables
TWP_1	0,928	1,070	
TWP_2	0,395	0,689	
TWP_3	0,568	1,418	
LM_0	0,574		Confounding

Variable	P Value	OR Exp(B)	Results
			Variables
LM_1	0,632	1,265	
LM_2	0,844	1,126	
LM_3	0,438	0,653	
LM_4	0,267	2,544	
LM_5	0,856	0,909	
LM_6	0,592	1,498	
LM_7	0,996	0.161	
LM_8	0,506	0,565	
LM_9	0,633	0,678	
LM_10	0,052	4,904	
LM_11	0,384	0,620	
JM_0	0,340		Confounding Variables
JM_1	0,680	1,514	
JM_2	0,141	1,859	
JM_3	0,297	4,237	

Source: Data Processing

In the final modeling, the variable significantly associated with employee performance is the work team (TP), controlled by confounding variables, namely target completion time (TWP), work environment (LM), and type of issue (JM). The model is considered appropriate as it meets the model significance requirement, as indicated by the omnibus test value (p = 0.000). Based on Nagelkerke R Square, a value of 0.426 was obtained, meaning that the independent variables in the model explain 42.6% of employee performance. The most dominant variable associated with employee performance is the work team in the TP_2 dummy category, specifically the IT Intranet team, which has the highest OR = 61.847 and a significant p-value (0.000). This indicates that the TP_Ref 2 variable (IT Intranet) has a very strong positive relationship with employee performance. In other words, employees in the TP_2 category (IT Intranet) are 61.847 times more likely to have good performance compared to the reference category TP_0, which is IT Information System.

Next, two categories of variables with a p-value < 0.05, indicating statistical significance, will be explained. Below are these variables along with their ratios. The first category is the work team variable (TP) in the TP_1 dummy category, which is IT Support, with an OR = 19.662 and a significant p-value (0.037). This indicates that employees in the TP_1 category (IT Support) are 19.662 times more likely to have good performance compared to the reference category TP_0, which is IT Information System. The second category is the work team variable (TP) in the TP_7 dummy category, which is IT Sysadmin, with an OR = 18.539 and a significant p-value (0.042). This indicates that employees in the TP_7 category (IT Sysadmin) are 18.539 times more likely to have good performance compared to the reference category TP_0, which is IT Information System.

4. Conclusion and Suggestions

4.1 Conclusion

Based on the results of data analysis and the discussions presented in the preceding chapters, and with reference to the formulated hypotheses, the following conclusions can be drawn:

1. The type of issue in work tickets used for employee performance assessment plays a crucial role. This is demonstrated by the fact that issues categorized as hardware and service have a significantly higher likelihood of being associated with better performance compared to the reference category, software. Meanwhile, the network category has not yet shown a statistically significant likelihood of being associated with better performance compared to the software category. Employee recognition for successfully resolving work tickets related to hardware and service issues has been proven to be more favorable. Management needs to further evaluate why network-related issues do not have a significant impact on employee performance and give special attention to software-related issues, as employees handling them tend to exhibit lower performance.
2. The target resolution time has a positive impact on the likelihood of improved employee performance. A well-defined resolution time can enhance employee productivity. This is demonstrated by the low and high resolution time categories, which significantly contribute to performance improvement. In contrast, the medium and critical categories do not show a significant effect on employee performance. Management should prioritize the low and high resolution time categories, as they have proven effective in enhancing employee performance, while also conducting further evaluation to understand why the medium and critical resolution time categories do not yield a significant impact.
3. In this study, the problem environment does not have a direct significant impact on employee performance, leading to the rejection of the hypothesis. This indicates that the problem environment alone does not necessarily determine employee performance. Instead, it acts as a confounding variable, influencing both the independent variables (type of issue, target resolution time, and work team) and employee performance. In other words, the problem environment moderates or affects the relationship between other variables and employee performance. Therefore, it remains included in the binary logistic regression model. Consequently, the IT Division of PT XYZ in Kediri should recognize that while the problem environment does not directly influence employee performance, it still plays a crucial role in shaping performance outcomes.
4. The work team (TP) significantly influences the likelihood of improved employee performance. The findings of this study confirm the proposed hypothesis. Work teams in the IT Support, IT Intranet, IT Helpdesk, IT Operation, and IT Sysadmin categories exhibit a significant relationship with employee performance. In contrast, work teams in the IT Asset and IT Network categories do not show a significant relationship with employee performance. Efforts to enhance the performance of teams that have demonstrated a significant impact on employee performance can contribute substantially to overall

employee performance. Additionally, the company should investigate the factors that make these work teams effective. Lessons learned from high-performing teams can be applied to other teams that have not yet shown significant results.

5. Based on the findings of this study, it has been demonstrated and proven that problem type, resolution time, work environment, and work team collectively have a significant influence on the likelihood of employee performance. This underscores the importance of considering these four factors comprehensively in efforts to improve employee performance. The findings indicate that employee performance is not determined by a single factor alone but is the result of a complex interaction between multiple factors. In this context, the type of problem encountered, expectations for resolution time, work environment conditions, and work team dynamics all contribute to overall employee performance.

4.2 Suggestions

Based on the analysis conducted in this study, the researcher provides the following recommendations that can be utilized by relevant stakeholders. First, tor the Information Technology Division of PT. XYZ in Kediri, the findings of this study are expected to be beneficial for the company needs to conduct an in-depth analysis of the most frequently encountered issue types by employees. The goal is to identify the root causes of these issues and their impact on performance, then prioritize the most critical problems, such as network-related issues, by evaluating network infrastructure to uncover deeper potential problems, such as inadequate bandwidth capacity, outdated hardware, or suboptimal configurations. These factors may have a significant impact on employee performance.

Another recommendation, to ensure that the resolution time targets for medium and critical issues, which showed insignificant results, are reanalyzed and set realistically, taking into account the complexity of the issues and the availability of resources. Overly tight time targets may cause stress and pressure on employees, which could actually lower their performance. On the other hand, overly relaxed time targets are also not ideal, as they may reduce employees' sense of urgency and motivation to resolve issues promptly.

The company should continue to monitor and manage workplace environment factors. For instance, if physical conditions pose issues, improvements should be made to lighting, temperature, or noise levels. Regarding psychosocial factors, consider enhancing workplace culture, improving communication, or providing leadership training. Related for evaluation, due to a comprehensive evaluation is very important, company should enhance their roles and responsibilities of the IT Asset and IT Network teams. Are there overlaps with other teams? Is there clarity in task distribution? Provide relevant training to enhance the skills and knowledge of the IT Asset and IT Network teams. This training may include technical aspects, project management, or interpersonal skills.

For future researcher, we advised to incorporate automatic variable selection methods, such as forward and backward selection, in binary logistic regression. These methods can help identify the most relevant independent variables and reduce multicollinearity issues. Beside it, to

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strengthen the research design and establish causal relationships, future researchers are encouraged to use study designs such as Randomized Controlled Trials (RCT) or other experimental designs. These designs allow researchers to control for other variables that may influence the outcome and manipulate the independent variables to observe whether changes in the independent variables lead to changes in the dependent variable.

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