Journal of Environmental and Development Studies
Journal homepage: https://talenta.usu.ac.id/jeds

# The Effect of Employee Productivity on Public Services Through Improved Performance of the Human Resources Development Agency of North Sumatra Province

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**ARTICLE INFO**

**Article history:**
Received 02-04-2023
Revised 10-05-2023
Accepted 14-04-2023
Available online 16-05-2023

E-ISSN: 2745-4592

**How to cite:**
Irma Safitri Nasution, Badaruddin, & Rujiman. The Effect of Employee Productivity on Public Services Through Improved Performance of the Human Resources Development Agency of North Sumatra Province. Journal of Environmental and Development Studies. 2023. 4(1):36-49



https://doi.org/10.32734/jeds.v4i01.91787

**ABSTRACT**

As an effort to build the quality of human resources, organizations need to carry out human resource development which is a process of increasing knowledge, skills and abilities in order to achieve national development goals which include planning, development and management. Through research on performance improvement at the North Sumatra Province human resource development agency, this study aims to analyze the effect of work productivity on public services. The population and sample in this study were prospective civil servants, Alumni of the Latsar state civil apparatus who had attended the Basic Training for prospective civil servants at the North Sumatra provincial human resource development agency totaling 120 (one hundred and twenty) people. The results of this study are: 1) There is a positive effect of work productivity on performance improvement; (2) there is no positive effect of work productivity on public services; (3) there is a positive effect of performance improvement on public services; (4) there is a positive direct effect of work productivity on public services through performance improvement; (5) there is an indirect effect of work productivity on public services through performance improvement.

**Keywords:** public service groundwater, performance improvement, work productivity

## 1. Introduction

Productivity contains a view of life and a mental attitude to improve the quality of life in order to always strive to develop themselves. This is in line with one of the tasks of the North Sumatra Province Human Resources Development Agency, namely: "assisting the governor in carrying out supporting functions of government affairs in the field of competency development of human resource apparatus" to realize a professional, trustworthy, and dignified state civil apparatus. For this reason, it is important for the North Sumatra Province human resource development agency as the organizer of education and training in North Sumatra Province to produce state civil servants who have good work productivity in order to achieve improved performance and maximum public services. Work productivity is a human desire and effort to always improve the quality of life and livelihood in all fields. Performance improvement is the effort and ability to achieve work results that will be achieved in accordance with the targets or goals of an organization. To assess work productivity variables and performance improvement, public service variables are needed as a benchmark for whether the training activities organized at the North Sumatra Province Human Resources Development Agency have a significant influence.

The "Badan Pengembangan Sumber Daya Manusia" (BPSDM Provsu) of North Sumatra Province or previously known as the "North Sumatra Provincial Education and Training Agency" in 2016 before undergoing a change in nomenclature in 2017 is an organizing agency for the implementation of secretarial duties and functions, certification of institutional management competencies, and development of competency training that strives to provide maximum good service through the implementation of training activities. [Based on Pergub No. 23 of 2019 that the North Sumatra Provincial Human Resources Development Agency has the main tasks and functions of carrying out the implementation of competency development within the Provincial and Regency / City governments, as well as providing administrative services and technical services to all elements within the North Sumatra Provincial Human Resources Development Agency.

"The implementation of education and training held at the North Sumatra Province Human Resources Development Agency aims to increase the productivity of ASN work so that it synergizes with performance and public services to the community and other state civil apparatus after going through the training process and successfully actualizing it in their respective agencies."[2] With this goal, the North Sumatra Province Human Resources Development Agency needs support not only from Widyaiswara and organizers but also from trainees so that training can be carried out properly and can produce dignified and qualified state civil apparatus that are beneficial to the organization where they work.

Based on the author's observations in the field through interviews with Widyaiswara as teaching staff, there are still many participants who have not mastered their main duties and functions. This fact is based on observations before the participants graduate and become alumni, for further assessment there is still a need for benchmarks to assess the public services implemented by the participants in the community. However, in some cases there are still many state civil apparatus who are fairly young but work productivity is not optimal.

This causes the organization/agency where the training alumni participants come from to feel that they have to work with other partners to support the implementation of activities in that place. For example, in terms of using computers, building applications, skills in carrying out public services, the ability to use other electronic devices such as: scanners, printers, infocus and so on. The existence of these obstacles is an illustration of the low productivity of the work of the state civil apparatus, which has an impact on improving performance and their main duties as civil servants. This description has also made it clear the impact that will affect regional development which is expected through investment in human resources through the development and improvement of human resources, where the human resource development agency of North Sumatra province is expected to produce professional and trustworthy apparatus, as well as have creativity and innovation.

The purpose of this study is to analyze the effect of work productivity and performance improvement on public services. Work productivity is a human effort to always improve the quality of life in all fields while. Performance improvement is an effort to achieve work results with predetermined targets or goals. It takes public service variables that become benchmarks and assess the relationship between work productivity variables and performance improvement and their relationship with regional development.

## 2. Method

This study uses quantitative research with a path analysis model, which is one of the multivariate statistical analysis techniques used to model the cause-and-effect relationship between related variables. In path analysis, the observed variables are connected to a path diagram model that shows the relationship between independent and dependent variables, as well as intervening (mediating) variables. This path model is used to test hypotheses about the relationship between variables and measure the strength and direction of the relationship. This research includes analysis and interpretation of the data that has been collected and everything in this study is determined from the results of data collection that reflects the actual situation. The population in this study were Basic Training Alumni of prospective civil servants. Basic training participants for prospective civil servants are intended for prospective civil servants who have just graduated to fulfill 100% of salaries and become 100% civil servants carried out at the human resource development agency of North Sumatra Province. The sample taken amounted to 3 (three) batches / classes and each batch amounted to (forty) people, so that the total number of research subjects was 120 (one hundred and twenty) participants.

The data collection method used is by distributing questionnaires to Latsar participants of prospective civil servants with a set of questions and written statements related to work productivity and performance improvement and their influence on public services after being implemented into their respective agencies.

The data analysis used is validity test, normality test, reliability test, linearity test, heteroscedasticity test, multicollinearity test with the following results:

*2.1. Validity Test*

*2.1.1. Work Productivity Variable (X)*

Table 1. Validity Test of Work Productivity Variables

| No of Item | $r_{xy}$ | $r_{table}$ | Description |
|---|---|---|---|
| 1 | 0,628 | 0,361 | Valid |
| 2 | 0,724 | 0,361 | Valid |
| 3 | 0,505 | 0,361 | Valid |
| 4 | 0,274 | 0,361 | Invalid |
| 5 | 0,154 | 0,361 | Invalid |
| 6 | 0,497 | 0,361 | Valid |
| 7 | 0,461 | 0,361 | Valid |
| 8 | 0,469 | 0,361 | Valid |
| 9 | 0,474 | 0,361 | Valid |
| 10 | 0,536 | 0,361 | Valid |
| 11 | 0,379 | 0,361 | Valid |
| 12 | 0,230 | 0,361 | Invalid |

From the output above, it is known that the X variable data above has 9 (nine) valid questions resulting from the comparison of the $t_{table}$ value with N = 30 at 5% significance of 0.361, while there are 3 (three) invalid questions. Thus, it is known that all Pearson's r Value values are greater than the $r_{table}$ value, which means that the 9 questionnaire items for the Work Productivity variable (X1) are declared valid and can be used as data collection tools in the research conducted.

*2.1.2 Performance Variable (Y)*

Tabel 2. Validity Test of Performance Improvement Variables

| No of Item | $r_{xy}$ | $r_{table}$ | Description |
|---|---|---|---|
| 1 | 0,087 | 0,361 | Invalid |
| 2 | -0,126 | 0,361 | Invalid |
| 3 | 0,743 | 0,361 | Valid |
| 4 | 0,743 | 0,361 | Valid |
| 5 | 0,599 | 0,361 | Valid |
| 6 | 0,715 | 0,361 | Valid |
| 7 | -0,158 | 0,361 | Invalid |
| 8 | 0,555 | 0,361 | Valid |
| 9 | 0,714 | 0,361 | Valid |
| 10 | 0,370 | 0,361 | Valid |
| 11 | 0,657 | 0,361 | Valid |
| 12 | 0,051 | 0,361 | Invalid |

From the output above, it is known that the Y variable data above has 8 (eight) valid questions resulting from the comparison of the ttable value with N = 30 at 5% significance of 0.361, while there are 4 (four) invalid ones. Thus, it is known that all Pearson's r Value are greater than the rtable value, which means that the 8 questionnaire items for the performance improvement variable (Y) are declared valid and can be used as data collection tools in the research conducted.

*2.1.3 Public Service Varible (Z)*

Tabel 3. Public Service Variable Validity Test

| No of item | $r_{xy}$ | $r_{tabel}$ | Description |
|---|---|---|---|
| 1 | 0,578 | 0,361 | Valid |
| 2 | 0,775 | 0,361 | Valid |
| 3 | 0,365 | 0,361 | Valid |
| 4 | 0,578 | 0,361 | Valid |
| 5 | 0,775 | 0,361 | Valid |
| 6 | 0,067 | 0,361 | Invalid |
| 7 | 0,263 | 0,361 | Invalid |
| 8 | 0,349 | 0,361 | Invalid |
| 9 | 0,528 | 0,361 | Valid |
| 10 | 0,554 | 0,361 | Valid |
| 11 | 0,176 | 0,361 | Invalid |
| 12 | 0,394 | 0,361 | Valid |

From the output above, it is known that the Z variable data above has 8 (eight) valid questions resulting from the comparison of the ttable value with N = 30 at 5% significance of 0.361, while there are 4 (four) invalid questions. Thus, it is known that all Pearson's r Value are greater than the rtable value, which means that the 8 items lifting the Public Service variable (Z) are declared valid and can be used as data collection tools in the research conducted.

*2.2. Reliability Test Results*

*2.2.1. Reliability Test of Work Productivity Variable (X)*

Table 4. Reliability Test of Work Productivity

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .701 | 13 |

The reliability test results for the work productivity variable (X) based on the Cronbach Alpha test statistics can be seen in table 4.7 which shows that X provides a Cronbach Alpha value of 0.701> 0.6 and according to Nunnally's criteria (1967) it can be said to be reliable. Thus, the series of questionnaires used in the Work Productivity Variable are reliable.

*2.2.2. Reliability Test of Performance Improvement Variable (Y)*

Table 5. Performance Improvement Reability Test

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .694 | 13 |

The reliability test results for the Performance Improvement Variable (Y) based on the Cronbach Alpha test statistics can be seen in table 4.8 which shows that Y provides a Cronbach Alpha value of 0.694> 0.6 and according to Nunnally's criteria (1967) it can be said to be reliable. Thus, the series of questionnaires used in the Performance Improvement Variable are reliable.

*2.2. Classical Assumption Testing*
*2.2.1. Normality*

Table 7. Normality Test Summary
**One-Sample Kolmogorov-Smirnov Test**

| | | X | Y | Z |
|---|---|---|---|---|
| N | | 120 | 120 | 120 |
| Normal Parameters[a] | Mean | 41.8667 | 37.7167 | 37.2250 |
| | Std. Deviation | 2.39374 | 2.18160 | 1.78915 |
| Most Extreme Differences | Absolute | .190 | .193 | .251 |
| | Positive | .136 | .148 | .127 |
| | Negative | -.190 | -.193 | -.251 |
| Kolmogorov-Smirnov Z | | 2.086 | 2.118 | 2.748 |
| Asymp. Sig. (2-tailed) | | .000 | .000 | .000 |

a. Test distribution is Normal.

From table 7 above, it can be seen the results of the calculation with the help of SPSS 20 software. The results of these calculations are summarized in the table above, so the normality test can be described as follows:

a. Normality Test of Work Productivity Variable (X)
The significance value of the calculation results for the Work Productivity Variable (X) is 2.086 and this figure is greater than 0.05, so the Work Productivity Variable data is normally distributed.

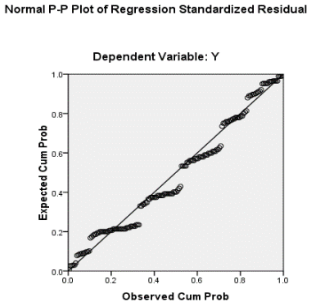


Figure 1. Normal P-Plot of Work Productivity Variables

b. Normality Test of Performance Improvement Variable (Y)
The significance value of the calculation results for the Performance Improvement Variable (Y) is 2.118 and this figure is greater than 0.05, so the Performance Improvement Variable data is normally distributed.

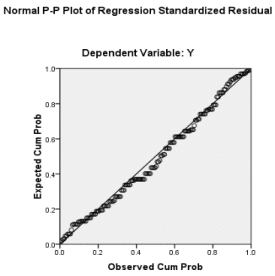


Figure 2. Normal P-Plot Graph of Performance Improvement Variables

Figure 2 in the graph can be seen that the data is around the diagonal line and follows the direction of the line, which means that the normality requirement can be met.

c. Public Service Normality Test (Z)
The significance value of the calculation results for the Public Service Variable (Y) is 2.748 and this figure is greater than 0.05, so the Public Service Variable data is normally distributed.

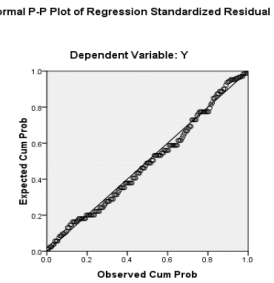


Figure 3. Normal P-Plot Graph of Public Service Variables

Figure 3 in the graph shows that the data is around the diagonal line and follows the direction of the line, which means that the normality requirement can be met.

*2.2.2 Linearity Test*

a. Linearity Test of Work Productivity Variable (X) on Performance Improvement Variable (Y)
   From the results of calculations and variant analysis of the regression equation of the Performance Improvement Variable (Y) on the Work Productivity Variable (X) can be seen in table 8.

Table 8. ANOVA for Linearity Test of $X_2$ on $X_1$

**ANOVA Table**

| | | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|---|
| Y * X | Between Groups | (Combined) | 383.822 | 9 | 42.647 | 25.699 | .000 |
| | | Linearity | 371.742 | 1 | 371.742 | 224.009 | .000 |
| | | Deviation from Linearity | 12.079 | 8 | 1.510 | .910 | .511 |
| | Within Groups | | 182.545 | 110 | 1.660 | | |
| | Total | | 566.367 | 119 | | | |

From the table above, it can be seen in the Deviation from Linearity test with an F value of 0.910 and a significance of 0.511. Thus, from the calculation of the significant value of 0.481> 0.05, this means that the linear regression model is acceptable.

Linearity Test of Public Service Variable (Z) on Work Productivity Variable (X) From the results of calculations and analysis of variance on the regression equation of Public Service Variable (Z) on Work Productivity Variable (X) can be seen in table 9.

Table 9. ANOVA for Linearity Test of Z over X

**ANOVA Table**

| | | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|---|
| Z * X | Between Groups | (Combined) | 156.330 | 9 | 17.370 | 8.507 | .000 |
| | | Linearity | 149.801 | 1 | 149.801 | 73.368 | .000 |
| | | Deviation from Linearity | 6.530 | 8 | .816 | .400 | .919 |
| | Within Groups | | 224.595 | 110 | 2.042 | | |
| | Total | | 380.925 | 119 | | | |

From table 9 above, it can be seen in the Deviation from Linearity test with an F value of 0.400 and a significance of 0.919. Thus, from the calculation of the significant value of 0.919> 0.05, this means that the linear regression model is acceptable.

b. Linearity Test of Public Service Variables (Z) on Performance Improvement Variables (Y)
From the results of calculations and analysis of variance on the regression equation of the Performance Improvement Variable (Y) on the Public Service Variable (Z) can be seen in table 10.

Table 10. ANOVA for Linearity Test of Z over Y

**ANOVA Table**

| | | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|---|
| Z * Y | Between Groups | (Combined) | 249.807 | 9 | 27.756 | 23.286 | .000 |
| | | Linearity | 228.382 | 1 | 228.382 | 191.599 | .000 |
| | | Deviation from Linearity | 21.425 | 8 | 2.678 | 2.247 | .229 |
| | Within Groups | | 131.118 | 110 | 1.192 | | |
| | Total | | 380.925 | 119 | | | |

From table 10 above, it can be seen in the Deviation from Linearity test with an F value of 2.247 and a significance of 0.229. Thus, from the calculation of the significant value of 0.229> 0.05, this means that the linear regression model is acceptable.

*2.2.3. Heteroscedasticity Test*
The heteroscedasticity test in this study uses the Glejser Test which is carried out by regressing the independent variable on the absolute value of the residual (ABS_RES). If the significance value between the independent variable and the absolute residual is more than 0.05 then there is no heteroscedasticity problem.

Table 11. Heteroscedasticity Test

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | StandardizedCoefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 1.427 | 1.248 | | 1.143 | .255 |
| | Work Productivity | .003 | .049 | .010 | .063 | .950 |
| | Performance Improvement | -.019 | .053 | -.055 | -.349 | .728 |

a. Dependent Variable: Abs_RES

From the output above, it can be seen that the significance value of the three variables, namely the work productivity variable and performance improvement, does not occur heteroscedasticity problems in the regression model because the three independent variables are worth more than 0.05. While looking at the pattern of dots on the regression scatterplots is described as follows:

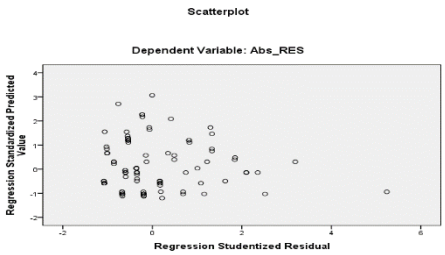


Figure 4. Scatterplot

From the output above, it can be seen that the points do not form a clear pattern, and the points spread above and below the number 0 on the Y axis.

*2.2.4. Multicollinearity Test*

Table 12. Multicollinearity Test

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| 1 | (Constant) | 13.278 | 1.916 | | 6.929 | .000 | | |
| | X | .000 | .075 | .000 | -.006 | .995 | .344 | 2.910 |
| | Y | .635 | .082 | .775 | 7.764 | .000 | .344 | 2.910 |

a. Dependent Variable: Z

Based on Table 12 above, it can be explained that the VIF value of X = 2.910 < 10 with the acquisition of a tolerance value of 0.344> 0.10, the acquisition value of VIF Y = 2.910 < 10 with a tolerance value of 0.344> 0.10. From the description above, it can be concluded that there is no correlation between independent variables (independent variables), this means that the regression model made in this study does not occur multicollinearity. After the requirements test is carried out on the research results above and has met the requirements, it will be continued with hypothesis testing. The analysis in hypothesis testing is divided into 2 (two) stages, namely determining and testing the coefficient and testing the research hypothesis.

*2.2.5. Hypothesis Testing*

Based on the results of calculations based on data obtained using SPSS 20 software, all coefficients of each variable are positive and significant with an alpha of more than 0.05.

a. Equation 1: Y = a + bx + e1

Table 13**.** Coefficients X to Y

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 6.804 | 2.062 | | 3.299 | .001 |
| | X | .738 | .049 | .810 | 15.013 | .000 |

a. Dependent Variable: Y

From table 14. below the coefficient of determination is obtained R2 = 0.656. This means that variations in changes in Work Productivity (X), can explain 0.656 variations in changes in Performance Improvement (Y). Meanwhile, the effect of other variables on the Performance Improvement variable (Y) is $\rho y\epsilon 1 = \sqrt{1 - 0.656} = 0.344$. This result shows that there are other variables that affect Performance Improvement by 0.344.

Table 14. Model Summary Equation 1

Model Summary[b]

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .810[a] | .656 | .653 | 1.28427 |

a. Predictors: (Constant), X

b. Dependent Variable: Y

b. Equation 2 : $Z = a + bx + by + e_2$

Tabel 15. Coefficients X and Y on Z

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | **B** | **Std. Error** | **Beta** | **t** | **Sig.** |
| 1 | (Constant) | 13.278 | 1.916 | | 6.929 | .000 |
| | X | .000 | .075 | .000 | -.006 | .995 |
| | Y | .635 | .082 | .775 | 7.764 | .000 |

a. Dependent Variable: Z

From table 16 below the coefficient of determination is obtained R2 = 0.600. This means that variations in changes in Work Productivity (X) and Performance Improvement (Y) can explain 0.600 variations in changes in Public Services (Z). Meanwhile, the effect of other variables on the Public Service variable (Z) is $\rho y\epsilon 2 = \sqrt{1 - 0.600} = 0.400$. This result shows that there are other variables that affect public services by 0.400.

Table 16. Model Summary Equation 2

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .774[a] | .600 | .593 | 1.14183 |

a. Predictors: (Constant), Y, X

b. Dependent Variable: Z

The results of the coefficient calculation with SPSS 20 are used as a basis for testing previously made hypotheses and for measuring the effect of the dependent variable on the independent variable in the structural model created for this study. In testing this hypothesis, it must meet the conditions if R Pearson Value> $t_{table}$ then the coefficient is significant and vice versa if $t_{count} < t_{table}$ then the coefficient is not significant. To prove the fourth hypothesis of this study, namely the effect of Work Productivity (X) on Performance Improvement (Y) can be seen from the results of the Anova calculation.

Table 17. ANOVA Equation 1

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 371.742 | 1 | 371.742 | 225.386 | .000[a] |
| | Residual | 194.624 | 118 | 1.649 | | |
| | Total | 566.367 | 119 | | | |

a. Predictors: (Constant), X

b. Dependent Variable: Y

The results of the ANOVA calculation obtained $F_{count}$ value of 225.386 is greater than $F_{table}$ 2.68 with a probability value (sig.) = 0.000. Because the probability value of 0.000 <0.05 means that Work Productivity (X) has a positive effect on Performance Improvement (Y) with significant results. Meanwhile, to prove the hypothesis that there is an indirect effect of Work Productivity (X) and Performance Improvement (Y) on Public Services (Z) can be seen from the results of the Anova calculation.

Table 17. ANOVA Equation 1

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 371.742 | 1 | 371.742 | 225.386 | .000[a] |
| | Residual | 194.624 | 118 | 1.649 | | |
| | Total | 566.367 | 119 | | | |

a. Predictors: (Constant), X

b. Dependent Variable: Y

Table 18. ANOVA Equation 2

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 228.382 | 2 | 114.191 | 87.584 | .000[a] |
| | Residual | 152.543 | 117 | 1.304 | | |
| | Total | 380.925 | 119 | | | |

a. Predictors: (Constant), X, Y

b. Dependent Variable: Z

The results of the ANOVA calculation obtained $F_{count}$ value of 87.584 greater than $F_{table}$ 2.68 with a probability value (sig.) = 0.000. Because the probability value of 0.000 <0.05 means that Work Productivity (X), Performance Improvement (Y) has an effect on Public Services (Z) with significant results.

## 3. Result and Discussion

Based on the research results, the following table is obtained.

Table 19. Normality Test Summary

**One-Sample Kolmogorov-Smirnov Test**

| | | X | Y | Z |
|---|---|---|---|---|
| N | | 120 | 120 | 120 |
| Usual Parameters | mean | 41.8667 | 37.7167 | 37.2250 |
| | St. Deviasi | 2.39374 | 2.18160 | 1,78915 |
| The Most Extreme Difference | Absolute | .190 | .193 | .251 |
| | Positive | .136 | .148 | .127 |
| | Negative | -190 | -.193 | -.251 |
| Kolmogorov-Smirnov Z | | 2.086 | 2.118 | 2.748 |
| asymp. Sig. (2-tailed) | | .000 | .000 | .000 |

A. Normal test distribution.

*From table 4.1 above, it can be seen the results of the calculation with the help of SPSS 20 software. The results of these calculations are summarized in the table above, then the normality test can be described as follows:*

Description :

a. The significance value of the calculation results for the Work Productivity Variable (X) is 2.086 and this figure is greater than 0.05, so the Work Productivity Variable data is normally distributed.
b. The significance value of the calculation results for the Performance Improvement Variable (Y) is 2.118 and this figure is greater than 0.05, so the Performance Improvement Variable data is normally distributed.
c. The significance value of the calculation results for the Public Service Variable (Y) is 2.748 and this figure is greater than 0.05, so the Public Service Variable data is normally distributed.

To determine the presence of multicollinearity, the Variance Inflation Factor (VIF) equation is used: [6] 1) If the Variance Inflation Factor (VIF) value is less than 10, the effect of multicollinearity is not dangerous and if the VIF is greater than 10, it indicates multicollinearity; 2) If the Tolerance value is greater than 0.10, multicollinearity occurs, while if the Tolerance is smaller than 0.10, there is no indication of multicollinearity. The multicollinearity test results can be seen in table 20.

Table 20. Multicollinearity Test

**Coefficients**

| | | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| **Model** | | **B** | **Std. Error** | **Beta** | **t** | **Sig.** | **Tolerance** | **VIF** |
| 1 | (Constant) | 13,278 | 1,916 | | 6,929 | .000 | | |
| | X | .000 | .075 | .000 | -.006 | .995 | .344 | 2,910 |
| | Y | .635 | .082 | .775 | 7,764 | .000 | .344 | 2,910 |

a. Dependent Variable: Z

Based on Table 20 above, it can be explained that the VIF value of X = 2.910 < 10 with a tolerance value of 0.344> 0.10, the acquisition of VIF value Y = 2.910 < 10 with a tolerance value of 0.344> 0.10. From the description above, it can be concluded that there is no correlation between the independent variables (independent variables), this means that the regression model made in this study does not occur multicollinearity. After testing the requirements on the research results above and meeting the requirements, it will be continued with hypothesis testing. The analysis in hypothesis testing is divided into 2 (two) stages, namely determining and testing the coefficient and testing the research hypothesis.

*3.1. Hypothesis Testing*

Based on the results of calculations based on data obtained using SPSS 20 software, all coefficients of each variable are positive and significant with alpha more than 0.05.

a. Equation 1: Y = a + bx + e1

Table 21. Coefficients X against Y

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 6,804 | 2,062 | | 3.299 | .001 |
| | X | .738 | .049 | .810 | 15,013 | .000 |

a. Dependent Variable: Y

From table 22 below, the coefficient of determination R2 = 0.656 is obtained. This means that variations in changes in Work Productivity (X), can explain 0.656 variations in changes in Performance Improvement (Y). While the effect of other variables on the variable Performance Improvement (Y) isyϵ1 = 1 - 0.656 = 0.344. These results indicate that there are other variables that affect Performance Improvement by 0.344.

Table 22. Model Summary Equation 1

Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .810a | .656 | .653 | 1.28427 |

a. Predictors: (Constant), X

b. Dependent Variable: Y

b. Equation 2: Z = a + bx + by + e2

Tabel 23. Coefficients X and Y against Z

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | T | Sig. |
| 1 | (Konstan) | 13.278 | 1.916 | | 6.929 | .000 |
| | X | .000 | .075 | .000 | -.006 | .995 |
| | Y | .635 | 0,082 | .775 | 7.764 | .000 |

A. Dependent Variable: Z

From table 24 below, the coefficient of determination $R_2$ = 0.600 is obtained. This means that variations in changes in Work Productivity (X) and Performance Improvement (Y) can explain 0.600 variations in changes in Public Service (Z). While the effect of other variables on the Public Service variable (Z) isyϵ2 = 1 - 0.600 = 0.400. These results indicate that there are other variables that affect public services by 0.400.

Table 24. Model Summary Equation 2

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .774a | .600 | .593 | 1.14183 |

a. Predictors: (Constant), Y, X

b. Dependent Variable: Z

The results of the coefficient calculation with SPSS 20 are used as the basis for testing previously made hypotheses and to measure the effect of the dependent variable on the independent variable in the structural model created for this study. In testing this hypothesis, it must meet the conditions if tcount> ttable then the coefficient is significant and vice versa if R Pearson Value < $t_{table}$ then the coefficient is not significant. The results of testing the proposed hypothesis can be explained as follows.

*a. Hypothesis 1 Test Results*

To prove the influence of Work Productivity Variable (X) on Performance Improvement (Y), the hypothesis tested is as follows.

From the calculation results, the coefficient of Work Productivity (X) on Performance Improvement (Y) or x2 is 0.810 with titung = 15.013 and sig. 0.000. Because the $t_{count}$ value is 15.013 < t table (1.658), the coefficient is significant. Thus it is proven that there is an influence of work productivity variables (X) on performance improvement (Y).

*b. Hypothesis 2 Test Results*

To prove the effect of Work Productivity (X) on Public Services (Z), the hypothesis tested is as follows.

From the calculation results obtained the coefficient of Work Productivity (X) on Public Services (Z) or 0.000 with titung = -0.06 and sig. 0,995. Because the tcount value is -0.06 < t table (1.658), the coefficient is not significant. Thus it is proven that there is no effect of work productivity (X) on public services (Z).

*c. Hypothesis 3 Test Results*

To prove the effect of Performance Improvement (Y) on Public Services (Z), the hypothesis tested is as follows.

From the calculation results obtained the coefficient of Performance Improvement (Y) on Public Services (Z) or 0.775 with titung = 7.764 and sig. 0.000. Because the tcount value is 7.764> ttable (1.658), the coefficient is significant. Thus it is proven that there is an influence of performance improvement (Y) on public services (Z).

*d. Hypothesis 4 Test Results*

Simultaneous test (overall) of the dependent/independent variable (work productivity and performance improvement) on the independent/dependent variable (public services) can be done by comparing the probability value (sig) of the calculation results with a significance level in the study of 0.05.
It can also be done by comparing the value of $F_{count}$ with $F_{table}$ with the following rules:

Table 25. ANOVA Equation 1

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 371,742 | 1 | 371,742 | 225,386 | .000a |
| | Residual | 194.624 | 118 | 1,649 | | |
| | Total | 566,367 | 119 | | | |

a. Predictors: (Constant), X

b. Dependent Variable: Y

The results of the calculation of the regression test are presented in table 20. The results of the ANOVA calculation obtained the Fcount value of 225,386 which is greater than Ftable2.68 with a probability value (sig.) = 0.000. Because the probability value of 0.000 < 0.05 means that Work Productivity (X) has a positive effect on Performance Improvement (Y) with significant results.

*e. Hypothesis 4 Test Results*

To prove the fifth hypothesis of this study, namely the indirect effect of Work Productivity (X) and Performance Improvement (Y) on Public Services (Z) can be seen from the results of the Anova calculation.

Simultaneous testing (overall) of dependent / independent variables (work productivity and performance improvement) on independent / dependent variables (public services) can be done by comparing the probability value (sig) of the calculation results with a significance level of 0.05 on learning.

Tabel 26. ANOVA Equation 2

**ANOVAb**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 228,382 | 2 | 114.191 | 87,584 | .000a |
| | Residual | 152.543 | 117 | 1.304 | | |
| | Total | 380,925 | 119 | | | |

a. Predictors: (Constant), X, Y

b. Dependent Variable: Z

The results of the regression test calculation are presented in table 8. The results of the ANOVA calculation obtained an Fcount value of 87.584 which is greater than Ftable2.68 with a probability value (sig.) = 0.000. Because the probability value of 0.000 <0.05 means that Work Productivity (X), Performance Improvement (Y) has an effect on Public Services (Z) with significant results.

3.2 Coefficient Contribution Results

*3.2.1. Contribution Results of Path Coefficient I*

1) The contribution of the Work Productivity variable (X) has a direct effect on Performance Improvement (Y) of 1 = 0.810
2) The contribution of Work Productivity (X) which has a direct effect on Performance Improvement (Y) of R2 = 0.656 or 65.6% is influenced by other factors not discussed in this study, namely 0.344 or 34.4%.

*3.2.2. Results of Path Coefficient Contribution II*

The contribution of work productivity variables (X), performance improvement (Y) directly and indirectly to public services (Z) can be seen in the following table:

Tabel 27. Results of Path II Contribution. Coefficient

| | | |
|---|---|---|
| **a. Effect of Work Productivity (X) on Public Services (Z)** | | |
| Direct<br>Indirect | 1 x 2 | **(0.810 x 0.775)**<br>**= 0.62775** |
| Total | | **0.62775** |
| **b. The Effect of Performance Improvement (Y) on Public Services (Z)** | | |
| Direct<br>Indirect | 2 x 2 | **0.775** |
| Total | | **0.775** |
| **c. Influence of Other Factors** | | |
| Direct | **2 =$\sqrt{1-R^2}$** | **1 – 0.600 = 0.400** |

The following is a summary of the direct effect, indirect effect and total effect of work productivity and performance variables on public services.

Table 28. Summary of the Direct Effect, Indirect Effect and Total Effect of Work Productivity and Performance Variables on Public Services

| Variable Effect | Total Influence | | Remainder1 and 2 | Total |
|---|---|---|---|---|
| | Direct | Indirect | | |
| X against Y | 0.810 | | | |
| X against Y ($R_2$) | 0.656 | | 0.344 | 1 |
| X against Z | | 0.62775 | | |
| Y against Z | 0.775 | | | |
| X, Y against Z ($R_2$) | 0.600 | | 0.400 | 1 |

## 4. Conclusion

The results of this study are: 1) There is a positive effect of Work Productivity on Performance Improvement; (2) There is no positive effect of Work Productivity on Public Services; (3) There is a positive effect of Performance Improvement on Public Services; (4) There is a positive direct effect of work productivity on public services through Performance Improvement; (5) There is an indirect effect of work productivity on public services through performance improvement. The effect of work productivity and performance improvement simultaneously affects public services by 0.600 or 60% with the results of the Anova calculation obtained an Fcount value of 87.584 which is greater than Ftable 2.68 with a probability value (sig.) = 0.000 which means that work productivity (X) and performance improvement (Y) affect Public Services (Z) with significant results with an error rate of 0.400.

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