

# Evaluation the Effect of Overseer's Performance on Quality Building Construction Work in Malang Regency

Wahyudi<sup>1</sup>, Taufikkurrahman<sup>2</sup>, Mukhamad Nur Qoyum<sup>3</sup>

<sup>1,2,3</sup>Department of Civil Engineering, Wisnuwardhana University of Malang, Indonesia-65199

**Abstract**— In an effort to improve the performance of the foreman, it must be based on the right vision, mission and strategy. Therefore monitoring of the performance of the foreman becomes very important. Seeing these problems this research was conducted to determine the factors that influence the performance of Overseers on Job Quality and find out the most dominant factors affecting it, and determine the strategies that must be done to improve the performance of the foreman.

The data analysis methodology used is factor analysis and multiple linear regression analysis of answers from questionnaires distributed to 48 respondents from the owner, contractor and supervisor consultant who were directly involved in the implementation of building construction projects in Malang Regency in the 2013 fiscal year.

Based on the results of the study, the factors that influence the performance of the foreman on the quality of work significantly are motivation, ability, experience and skills. the most dominant factor is the communication factor. the strategy that must be carried out to improve the performance of the foreman in building work in Malang district is that the foreman must always maintain and enhance the ability to organize labor, work tools and building materials and be able to translate each contractor's direction and be able to communicate well to facilitate work.

**Keywords**— Overseer Performance, Job Quality.

## I. INTRODUCTION

In order to improve the professionalism of the foreman's performance, of course the handling cannot be carried out partially, but this process requires a thorough overhaul. The improvement effort must be based on the right vision, mission and strategy. Therefore monitoring of the performance of the foreman becomes very important. The factors that are thought to influence the performance of the foreman against the Quality of Work in Building Construction Projects in Malang Regency are Motivation, Skills, Discipline, Education, Experience, Wages, Age and Skills.

## II. LITERATURE STUDY

### A. Project Construction

Project activities can be interpreted as a temporary activity that takes place in a limited period of time, with the allocation of certain resources and intended to produce products or deliverables whose quality criteria have been clearly outlined<sup>[4]</sup>. Construction is a process where the plans and specifications of designers are converted into structures and physical facilities. Based on project and construction understanding, then a construction project can be defined as a

project related to efforts to build an infrastructure building, which generally includes the main work, and includes the civil engineering and building fields.

### B. Foreman

The foreman as the head or supervisor of workers<sup>[3]</sup>. Revealed that one IBRD report described the foreman as "a labor sub-contractor that employs and supervises workers who employ and supervise labor" (a labor sub contractor who hire and supervise labors)<sup>[8]</sup>. State that there are seventeen factors that influence the success of small-scale projects<sup>[2]</sup>. These factors include adequate resources. Revealed that the foreman coordinated many construction workers 95.63% of the construction workforce are artisans and unskilled workers who are generally under the foreman<sup>[8]</sup>. Stated that the construction foreman in Jakarta could coordinate a workforce of 30 to 200 people<sup>[5]</sup>.

Although its role is important in the implementation of construction, the foreman has not been able to empower himself. There is no foreman professional association that can play an active role in improving expertise. The government agency that handles training for construction services workers (Puslatjakon, Kimpraswil Department) was only able to certify a number of 9,626 people until the end of December 2002 even though their number reached 55,000. This means that only 17.5% of the foremen are recorded, whereas according to regulations, every construction worker must have a certificate of expertise. The position of the foreman is under the coordination of the field executor from the contractor

The duties and responsibilities of foremen in construction projects are as follows (1). Position in the organizational structure, is directly responsible to the executor, and directs the workers. (2). Carry out all the work in accordance with the instructions given by the executor and / or the ranks above. (3). Trying to maximally help companies in their efforts to achieve the target of timeliness, quality and accuracy of cost. (4). Supervise the use of material goods in the field. (5). Responsible for everything related to the course of the project in the field. (6). Make a report on all project developments that exist and submitted to the Implementer

### C. Figures and Tables

Alleged Factors Affecting the Performance of Overseers Against the Quality of Building Construction Work in Malang Regency are as follows:

- Motivation

Encourage someone or group to do work by trying to fulfill their desires or give other attraction<sup>[4]</sup>

- Skills

Skills are the ability to do all the movements needed to achieve the required results, while measurements include: educational background (training) in the field of construction, work experience in the construction field, thoroughness in doing work, initiative in working, fast and precise

- Discipline

Discipline is the obedience / obedience of the workforce in complying with working hours that are valid for one day to complete the work in accordance with predetermined working hours.

- Education

Basically education is a human conscious effort to increase intelligence and skills towards adult and independent communities, therefore education is one indicator to measure the level of welfare of the community

- Experience

Experience is the length of work undertaken by someone in pursuing the same field of work continuously since he began the work until now

- Wage

Financial wages for workers as remuneration for work carried out and at the same time as motivators for implementing activities and increasing productivity in the future will depend on the mutually agreed system of remuneration or project management provisions<sup>[1]</sup>

- Age

Age is the length of time a person lives / labor, starting at birth until now. The age of the workforce in question is the productive age that is needed in doing a job.

- Skills

Skills are the ability to think creatively, communicate skills and coordinate (people, tools, materials) despite facing obstacles in carrying out construction project work. So that the foreman's skills can be interpreted as the ability, intelligence or skill of the foreman in carrying out his duties.

#### D. Statistic

##### Validity Test

Validity test is a measure that shows the level of validity and validity of an instrument. An instrument is said to be valid if it can reveal data from variables that are examined appropriately. The high and low validity of the instrument shows the extent to which the data collected does not deviate from the description of the intended validity<sup>[7]</sup>.

##### Test Reliability

Test Reliability refers to an understanding that an instrument is reliable enough to be used as a data collection tool because the instrument is good. Reliability testing is done by trying the instrument (quite once), then the data obtained is analyzed by certain techniques. To test the reliability used Cronbach Alpha method<sup>[6]</sup>. Alpha Cronbach method is used to find the reliability of instruments whose scores are not 1 and 0 (yes and no)

#### Multiple Linear Regression

Multiple linear regression analysis is one of the analyzes used to determine the shape of the relationship or influence between several independent variables on the dependent variable. In this study, the researcher limits the purpose of this study to only the two objectives of multiple linear regression above, namely to know the form of the relationship / influence between independent variables and the dependent variable. In addition, the researcher also wants to know which independent variables have the most influence on the dependent variable. This study is not intended for the purpose of prediction or forecasting the value of the dependent variable based on the value of the known independent variables. To find out the most influential factors on a variable, regression analysis techniques are used by looking at the highest regression coefficient numbers, F test (ANOVA) for the regression model simultaneously, t test for the partial regression model, R2 value (coefficient of determination). Internal factors are independent variables that affect the dependent variable. Steps in Testing Multiple Regression.

- Test the Assumption of the Regression Model

To get estimation parameters from the dynamic model used, in this study OLS (Ordinary Least Square) estimation method was used. The use of this method is accompanied by the underlying assumptions. These assumptions are: Normality, Non-Multicollinearity, Homoscedasticity, and Non-Autocorrelation.

- Test the Hypothesis

To prove the correctness of the hypothesis used the F Test with the following test criteria:

Hypothesis:

Ho = there is no difference in productivity index between groups.

H1 = there is a difference in productivity index between groups.

The conclusion is based on the Probability value:

- If the probability is  $> 0.05$ , then Ho is accepted.

- If the probability is  $< 0.05$ , then Ho is rejected.

### III. RESEARCH METHODS

If viewed from the method, this study includes descriptive research, namely to obtain factors that influence the performance of the foreman on the quality of building construction work in Malang Regency and to determine the most dominant factors that influence it and determine strategies to improve the performance of the Overseer. This research uses a survey method by capturing opinions, experiences and attitudes of respondents regarding existing problems, by taking primary data through questionnaires and secondary data from related institutions. Based on the factors that influence the performance of the foreman on the quality of building construction work in Malang Regency, the factors determined are then followed by determining the variables to be used as the questions to be measured in the form of a questionnaire.

The location of research in this study is building construction projects in Malang Regency in the 2013 fiscal

year on 9 development projects. The population of this study are people from Supervisory Consultants, Contractors and Owners who know the conditions and who are directly involved in building work in Malang Regency in the 2013 fiscal year, which is as many as 54 people consisting of elements of the Supervisory Consultant (as many Site Engineers as and Field Supervisor), from elements of the Contractor (Head of Project and Palaksana Field) and from as many Owner elements (PPTK and Field Supervisors)

IV. RESULTS AND DISCUSSION

Testing the assumptions of the regression model include assumptions test for normality, non-multicollinearity, homoskedasticity, and non-autocorrelation. The description of the calculation of the assumption of the regression model can be seen as follows:

A. Testing for Normality Assumptions

To test this assumption, the Kolmogorov-Smirnov method can be used, as shown in Table I.

TABLE I. Test for Normality Assumptions

Statistik Test	Value	Keterangan
Kolmogorov-Smirnov Z	0.960	Normal Spread
p-value	0.315	

Based on the Kolmogorov-Smirnov Z test above, the p-value of 0.315 is obtained, where the value is greater than  $\alpha = 0.05$ . From the test it was shown that errors or residuals had a normal distribution. So that it can be concluded that the assumption of error normality has been fulfilled.

B. Testing Assumptions for Non-Multicollinearity

To detect the presence or absence of multicollinearity can be seen from the Variance Inflation Factor (VIF). If the VIF value is  $> 10$ , it indicates multicollinearity. And if the opposite is  $VIF < 10$  then there is no multicollinearity as seen in Table 2.

TABLE II. Test Assumption of Multicollinearity

Variable Independen	VIF	Information
Motivation (X1)	1,295	Non Multikolinier
Skills (X2)	1,622	Non Multikolinier
Discipline (X3)	1,662	Non Multikolinier
Education (X4)	3,037	Non Multikolinier
Experience (X5)	1,328	Non Multikolinier
Wages/salaries (X6)	1,243	Non Multikolinier
Age (X7)	1,457	Non Multikolinier
Proficient (X8)	1.060	Non Multikolinier

From the results of calculations in Table II, each independent variable shows a VIF value of no more than 10, so the assumption that multicollinearity has not occurred has been fulfilled.

C. Testing of Homoscedasticity

T Examination of this assumption can be done using the Spearman rank correlation test, which is to test the correlation between the predicted value and the error value. The test

results with the Spearman rank method can be seen as in Table 3.

TABLE III. Test of Hooscedasticity Assumption

Statistik Test	Value	Information
Korelasi Rank Spearman	-0,195	Homoskedastisitas
p-value	0,185	

Based on Table III above, testing this assumption is obtained by the Spearman rank correlation coefficient of -0.195 with a p-value of 0.185. Because p-value is greater than  $\alpha = 0.05$ . From this test it can be concluded that the assumption of homoschedasticity has been fulfilled.

D. Testing of Assumptions for Non-Autocorrelation

To test for autocorrelation, the Durbin-Watson test statistic is used whose results can be seen in Table 4.

TABLE IV. Assuption Test for Non-Autocorrelation

Koefisien d	dL	dU	4 - d	Keterangan
2.025	1.18	1.94	2.06	Tidak ada autokorelasi

Based on Table IV above, the Durbin-Watson coefficient is 1.971. In the Durbin-Watson Table it is known that  $dL = 1.18$  and  $dU = 1.94$ . From the table above it is shown that  $d > dU$  ( $1.94 > 1.80$ ) and  $4 - d > dU$  ( $2.06 > 1.94$ ). So it can be concluded that there is no autocorrelation between errors and non-autocorrelation assumptions have been fulfilled.

Multiple Linear Regression

Processing data using multiple linear regression analysis, carried out several stages to find the relationship between independent and dependent variables. Based on the results of data processing using SPSS software, a summary is given as in Table 5.

The regression models obtained based on Table 5 are as follows:

$$Y = - 0.004 + 0.158 X1 + 0.213 X2 - 0.184 X3 + 0.111 X4 + 0.161 X5 - 0.009 X6 - 0.018 X7 + 0.603 X8 + e$$

In table V, it can be seen that not all independent variables have a significant value. Independent variables that have significant values are Motivation Variables (X1), Skill Variables (X2), Experience Variables (X5) and Skill Variables (X8). While variables that do not have insignificant values are Discipline Variables (X3), Educational Variables (X4), Wage Variables / Salaries (X6) and Age Variables (X7). The regression model has a coefficient of determination ( $R^2$ ) of 0.792. This means that the regression model obtained is able to explain the influence of the variables of motivation, skills, discipline, education, experience, wages / salary, age and skills on the quality of building construction work in Malang Regency at 79.2% and the remaining 20.8% explained by other factors outside of research. Then, to determine the independent variable that most influences the quality of work, it can be done by comparing the standardized regression coefficient ( $\beta$ ) between one variable and another. The most dominant variable influencing the quality of work is the variable that has the most standardized ( $\beta$ ) regression coefficient.

TABLE V. Summary of Results of Regression Analysis

Variabel	Koef $\beta$	Koef $\beta$ Standardizat ion	$t_{hitung}$	$p$ -value	Informatio n
Constant	-0.004		-0.019	0.985	Not Signifikan
Motivation (X1)	0.158	0.210	2.527	0.016	Signifikan
Skills (X2)	0.213	0.246	2.648	0.012	Signifikan
Discipline (X3)	-0.184	-0.182	-0.765	0.449	Not Signifikan
Education (X4)	0.111	0.123	0.965	0.340	Not Signifikan
Experience (X5)	0.161	0.197	2.342	0.024	Signifikan
Wages/salaries (X6)	-0.009	-0.012	-0.152	0.880	Not Signifikan
Age (X7)	-0.018	-0.023	-0.266	0.792	Not Signifikan
Proficient (X8)	0.603	0.607	2.502	0.017	Signifikan
$A = 0,05$ $R = 0,890$ Koefisien Determinasi ( $R^2$ ) = 0.792 $F$ -hitung = 18.575 $F$ -tabel = 2.187 $p$ -value = 0.000 $t$ -tabel = 2.023					

To compare the regression coefficients of each variable, Table VI is presented.

TABLE VI. Test Assumption of Multicollinearity

Ranking	Variabel	Koefisien $\beta$ Terstandarisasi
1	Motivation (X1)	0.607
2	Skills (X2)	0.246
3	Discipline (X3)	0.210
4	Education (X4)	0.197
5	Experience (X5)	-0.182
6	Wages/salaries (X6)	0.123
7	Age (X7)	-0.023
8	Proficient (X8)	-0.012

Based on Table 6 the Skill variable (X8) is the variable that has the largest standardized regression coefficient ( $\beta$ ), which is 0.607. That is, the quality of work in building construction in Malang Regency is at most influenced by proficient factors (X8) in work. A positive regression coefficient indicates that the higher the level of skill of the workforce, the better the quality of work.

*Hypothesis Test Coefficient of Regression Model*

*A. Simultaneous Regression Model Test*

Simultaneous regression model testing is done to show whether all the variables used in the regression model have a significant influence on the quality of work in building construction in Malang Regency. The hypotheses used in testing simultaneous regression model coefficients are presented in Table VII.

Based on Table VII hypothesis testing the regression model simultaneously uses the F test. In the F distribution table, the  $F_{Tabel}$  value obtained with degrees of freedom (df)  $n1 = 8$  and  $n2 = 39$  is equal to 2.187. If the value of F results in the calculation in Table VII are compared with  $F_{Tabel}$ , then

the calculated F calculation results are greater than  $F_{Tabel}$  ( $18,575 > 2,187$ ).

TABLE VII. Test Assumption of Multicollinearity

Hipotesis	Value	Decision
$H_0: \beta_i = 0$ (there is no significant influence between the variables Motivation, Skills, Discipline, Education, Experience, Wages / Salaries, Age and Skills on the quality of work)	$F = 18.575$ $p\text{-value} = 0.000$	Tolak $H_0$
$H_a: \beta_i \neq 0$ (there is a significant influence between the variables Motivation, Skills, Discipline, Education, Experience, Wages / Salaries, Age and skills on the quality of work), $\alpha = 0.05$	$F_{Tabel} = 2.187$	

In addition, in Table VII also obtained a p-value of 0.000. If the p-value is compared with  $\alpha = 0.05$  then the p-value is less than  $\alpha = 0.05$ . From the two comparisons, the decision of  $H_0$  is rejected at the level of  $\alpha = 0.05$ . So it can be concluded that there is a significant effect simultaneously between variables of motivation, skills, discipline, education, experience, wages / salary, age and skills on the quality of work

*B. Partial Test of Regression Model*

To test the relationship, the t test is used, which is by comparing the  $t_{count}$  to t table. The independent variable forming the regression model is said to have a significant effect if  $t_{count} > t$  table or  $p\text{-value} < \alpha = 0.05$ .

• *Motivation (X1)*

Motivational variables have a regression coefficient of 0.210. By using the help of SPSS software, the t test statistic obtained was 2.527 with a p-value of 0.016. The t-test statistic value is greater than t table ( $2.527 > 2.023$ ) and also p-value is smaller than  $\alpha = 0.05$ . This test shows that  $H_0$  is rejected. So it can be concluded that the level of motivation has a significant effect on the quality of building work.

• *Skills (X2)*

Skill variables have a regression coefficient of 0.246. By using the help of SPSS software, the t test statistic obtained is 2,648 with a p-value of 0.012. The t-test statistic value is greater than t table ( $2,648 > 2,023$ ) and also p-value is smaller than  $\alpha = 0.05$ . This test shows that  $H_0$  is rejected. So it can be concluded that the level of skill of workers has a significant effect on the quality of work.

• *Discipline (X3)*

Discipline variables have a regression coefficient of - 0.182. By using the help of SPSS software, the t test statistic was obtained at -0.765 with p-value of 0.449. The t-test statistic value is smaller than t table ( $-0.765 < 2,023$ ) and also p-value is greater than  $\alpha = 0.05$ . This test shows that  $H_0$  is accepted. So it can be concluded that the level of discipline of workers does not have a significant effect on the quality of work.

• *Education (X4)*

Educational variables have a regression coefficient of 0.123. By using the help of SPSS software, the t test statistic obtained is 0.965 with a p-value of 0.340. The t-test statistic

value is smaller than t table ( $0.965 < 2,023$ ) and also p-value is greater than  $\alpha = 0.05$ . This test shows that  $H_0$  is accepted. So it can be concluded that the education level of workers does not have a significant effect or a relatively small influence on the quality of work.

- *Experience (X5)*

Experience variables have a regression coefficient of 0.197. By using the help of SPSS software, the static test of tcount is obtained at 2.342 with p-value of 0.024. The t-test statistic value is greater than t table ( $2,342 > 2,023$ ) and also p-value is smaller than  $\alpha = 0,05$ . This test shows that  $H_0$  is rejected. So it can be concluded that the level of experience of workers has a significant effect on the quality of work.

- *Wages/salaries (X6)*

The wage / salary variable has a regression coefficient of -0.012. By using the help of SPSS software, the t test statistic obtained is -0.152 with a p-value of 0.880. The t-test statistic value is smaller than t table ( $-0.152 < 2,023$ ) and also p-value is greater than  $\alpha = 0.05$ . This test shows that  $H_0$  is accepted. So it can be concluded that the level of wages / salaries of workers does not significantly influence the quality of work.

- *Age (X7)*

Age variables have a regression coefficient of -0.023. By using the help of SPSS software, the statistical test of tcount is obtained at -0.266 with p-value of 0.792. The t-test statistic value is smaller than t table ( $-0.266 < 2,023$ ) and also p-value is greater than  $\alpha = 0.05$ . This test shows that  $H_0$  is accepted. So it can be concluded that the age level of workers does not significantly influence the quality of work.

- *Proficient (X8)*

Proficient variables have a regression coefficient of 0.607. By using the help of SPSS software, the statistical test for tcount is 2.502 with a p-value of 0.017. The t-test statistic value is greater than t table ( $2.502 > 2.023$ ) and also p-value is smaller than  $\alpha = 0.05$ . This test shows that  $H_0$  is rejected. So it can be concluded that the level of worker skills has a significant effect on the quality of work.

## V. CONCLUSION

Based on the results of the research and discussion described in the previous chapter, it can be concluded that:

1. From the results of the F test it is found that simultaneously Motivation factors (X1), Skills (X2), Discipline (X3), Education (X4), Experience (X5), Wages / Salaries (X6), Age (X7) and Skills (X8) jointly influence the quality of work with the value of  $F_{count} = 18,575 > F_{table} = 2.187$ . However, based on the partial t test the factors that significantly influence the quality of building construction work in Malang Regency are Motivation (X1) with  $t_{count} = 2.527 >$  from t table = 2.023, Skills (X2) with  $t_{count} = 2.648 >$  from t table = 2.023, Experience (X5) with  $t_{count} = 2.342 >$  from table = 2.023 and Skills (X8) with  $t_{count} = 2.502 >$  from t table = 2.023
2. From the results of the regression analysis, it is concluded that the most dominant variable on the quality of work is the Skill Variable (X8) with the  $\beta$  standardize coefficient of 0.607.

## VI. SUGGESTIONS

Based on the results of the analysis, we hereby advise the relevant parties to pay more attention to the following matters:

1. Always pay attention to skill factors in placing work foremen in construction projects.
2. The contractor is more selective in the selection of work foreman, so that it can produce work that is expected.
3. For further research, it is expected to add other variables and pay more attention to the indicators used, so that it is more applicable to perfecting this research

## REFERENCES

- [1] Ervianto, "Manajemen Proyek Konstruksi, Edisi Pertama," Salemba Empat. Yogyakarta, 2002.
- [2] Gao Smith. "Budget and schedule Success for Small Capital-Facility Project". *Journal of Management in Engginering, ASCE*. 2002.
- [3] Poerwadarminta. "Kamus Besar Bahasa Indonesia". Balai Pustaka. Indonesia, 1985.
- [4] Soeharto, I "Manajemen Proyek Dari Konseptual Sampai Oprasional Jilid 1" .*Erlangga*.Jakarta 2001
- [5] Soendaro and Haryanto. "Sistem informasi konsep, teknologi dan manajemen" .*Graha Ilmu*.Yogyakarta, 2005
- [6] Sugiyono. "Statistika Untuk Penelitian". Alfabeta. Bandung, 2016
- [7] Riduwan. "Skala Pengukuran Variable Penelitian". *Alfabeta*. Bandung, 2005.
- [8] Zen, A. "Sumber Daya Manusia Sektor Informal jasa Konstruksi". *Pekerjaan Umum*. Jakarta, 1997