

Preparation Factor Analysis of Construction Labor Performance in Palu City, Indonesia

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ABSTRACT

The success in the implementation of construction work is one of them by looking at the performance of the existing construction workforce because it is part of an indispensable resource. The results of the initial review show that some construction workers who do not have good performance are caused by various factors that influence them. Therefore, the purpose of this study was to determine how much the dominant influence of environmental factors, training methods, self-concept and leadership on the performance of construction workers in Palu city. This type of research is descriptive by distributing questionnaires to construction executors and supervisors in the field as many as 77 respondents. Data analysis using multiple linear regression methods calculated with the SPSS program. The results concluded that simultaneously showed the variables of work environment, training model, self-concept and leadership had a significant effect on the performance of construction workers with the regression equation $Y = 1.083 + 0.285X_1 + 0.183X_2 + 0.256 X_3 + 0.209X_4$. This research study provides recommendations to construction project managers in managing their human resources to consider work environment. It is recommended that construction work can run well, service users need to pay more attention to the work environment and conduct strict supervision of the implementation of activities, for construction service providers need to pay attention to the construction workforce used by supervising and coaching properly

Keywords – Factors, Performance, Labor, Contruccion

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I. INTRODUCTION

Construction project work is a temporary activity that takes place within a limited period of time [1], [2], with certain resources and is intended to carry out tasks whose goals and objectives [3], [4] In accordance with this opinion, the management of work must be carried out as well as possible, as well as in several construction works [4], [5] in the city of Palu in the last three years began to develop due to natural disasters in 2018. Various factors that affect the success of construction work [6], [7] need to be evaluated, because each construction work will be different [8], [9]. One of the main factors affecting construction work is resources consisting of people, materials, money, tools and work methods. It is because of this that resources must be managed properly [10]. The success of a construction project depends on the performance of resource management [11], [12]. The results of a survey on several ongoing construction works in Palu city, there is still work that is not satisfactorily completed and judging from the observation it turns out that this is largely due to the influence of human factors [13]. Where this human factor is seen the

construction workforce has not performed well [14]. Because of the above problems, researchers are interested in knowing what factors most affect the performance of construction labor [15], [16], namely by taking several existing factors

II. LITERATUR REVIEW

Construction work is a process of construction activities that are temporary, unique [17] and only done once and generally short-term [18]. This project activity is carried out by managing existing resources so that the results of construction work objectives can be achieved [19]. Projects are short activities with specific objectives that are carried out in a short time and use resources.[13], [20]. A construction project is a collection of activities that influence each other to achieve goals and have limitations, namely money, time and construction quality [17]. Based on the description above, it is concluded that the definition of a construction project is an activity that is temporary and has a planned goal using resources (humans, methods, materials, money, machines) [21], [22]. Based on the description above, it is concluded that the definition of a construction project is a

temporary construction work activity, has a planned goal and carries out using existing resources, namely humans, methods, materials, money, and machines [21].

Performance is the results of the job functions of a person or group in an organization that is influenced by various factors to achieve organizational goals in a certain period of time [23], [24]. Performance is the result of work that can be achieved by a person or group of people in an organization both quantitatively and qualitatively, in accordance with their respective authorities and responsibilities, in order to achieve organizational goals [25], [26]. Performance is the result of employee work seen from the aspects of quality, quantity, work time, and cooperation to achieve the goals set by the organization [20], [26]. Performance is the result of work in quality and quantity achieved by an employee in carrying out his duties in accordance with the responsibilities given to him [16], [24], [27].

Labor is everyone who is able to do work, both inside and outside of labor relations in order to produce services or goods both to meet their own and community needs [4], [6]. Labor is one of the resources that is not easy to manage. The rewards given vary greatly depending on the expertise of each workforce because no one person has the same characteristics [1], [9], [24].

Based on the various opinions above, it can be concluded that the performance of construction labor is the performance of a construction worker who performs a job in a construction project environment to produce buildings that have knowledge and skills. The performance review is viewed from (a) in terms of implementation; (b) in terms of level of achievement; (c) in terms of work results and (d) in terms of appearance.

A *Factors Affecting construction labor performance*

Factors that affect performance, namely (a) psychological ability factors, consisting of potential abilities and reality abilities (education) [28]; and (b) motivational factors formed from a person's attitude in dealing with work situations [29]. Performance is a combination of three important factors, namely (a) the ability and interest of a worker, (b) the ability and acceptance of task delegation explanations, and (b) the role and level of motivation of a worker [30], [31]. There are two factors that affect performance, namely internal factors of employees which are innate factors from birth and factors that are acquired as they develop (nature, talent, physique, knowledge, skills, work experience,

motivation) [22], [32], [33]. Organizational external environmental factors, namely circumstances, situations that occur outside the organizational environment that affect employee performance [22]. The performance of a person or group in an organization is influenced by internal factors and external factors and to achieve organizational goals within a certain time [34], [35]. Internal factors, consisting of intelligence, skills, emotional stability, motivation, role perception, family conditions, physical condition of a person and work group characteristics. While external factors, namely in the form of labor regulations, customer desires, competitors, social values, trade unions, economic conditions, changes in work locations, and market conditions [36], [37].

Based on some descriptions of the opinions above, it can be concluded that the factors that affect the performance of a construction worker are: (a) work results achieved; (b) the process of meeting quality standards, (c) the process of fulfilling the application of construction health and safety; (d) self-assessment of abilities.

B. *Work Environment Factors*

The work environment is a factor outside of humans both physical and non-physical in an organization [38], [39]. Physical factors in the work environment include work equipment, temperature in placework, density, noise, and workspace area, while non-physical includes work relationships [40], [41]. The work environment is everything that is around the employee that affects him in carrying out and completing the tasks assigned to him in an area [28], [42]. The work environment is all work facilities and infrastructure that exist around workers who do work that can have an impact on the implementation of the workers themselves [42]. The work environment consists of a place to work, hygiene facilities, lighting, tranquility, and care [25].

The work environment is the environment where employees carry out their daily tasks, because a conducive work environment will improve the ability of workers and provide a sense of security, comfort at work [25], [28], [42]. From the above opinions, it can be concluded that the work environment in construction projects is everything that is around the job site that can affect the work of construction workers, with various influencing factors, namely: (a) prioritizing work safety, (b) routine work, (c) environmental safety, and (d) work comfort.

C. Training Model

Factors that influence the training model include: (a) training goals and objectives must be clear and measurable; (b) instructors must be qualified experts; (c) learning materials must be tailored to the objectives to be achieved; (d) training methods must be in accordance with the capabilities of the workforce who are participants; and (e) trainees must meet predetermined requirements [16], [21], [30].

Training is a short-term educational process using systematic procedures to change the behavior of employees in one direction to improve organizational goals [20]. Training is an effort to improve mastery of various skills and techniques for carrying out specific, detailed and routine work [3]. From the description above, it can be concluded that the training model is a process to improve and perfect a person's skills in terms of ability and knowledge in carrying out their duties. So that several factors affect the training model, namely: (a) the educational background of participants, (b) the ability of instructors, (c) support for infrastructure and facilities for the learning process in training; (d) the learning process on the learning achievement of participants in training, (e) the learning achievement of participants on the success of job skills training.

D. Self-concept of Construction Personnel

Self-concept is all the thoughts, beliefs, and beliefs that constitute an individual's knowledge about himself and affect relationships with others [12], [18], [26]. Self-concept is a subjective picture of the self and a complex blend of unconscious and conscious attitudes, and perceptions [12], [20], [43]. Self-concept provides us with a frame of reference that influences our management of situations and relationships with others [20]. Self-concept is a person's perception of himself where this perception is formed through experience and interpretation of himself [25], [42]. From the description above, it can be concluded that what is meant by the self-concept of a construction worker is all the perceptions of a construction worker towards several aspects of self, namely: (a) physical/attitude changes, (b) relationships with humans, (c) cognitive development, and (d) personal identity.

E. Leadership

Leadership is the ability of a person to influence others to work towards the desired goals and objectives [25]. Leadership is a way to influence the behavior of subordinates, so that they

want to cooperate and work productively to achieve organizational goals [22], [33]. Leadership is the activity of influencing people who are directed to achieve common goals [39], [41], Leadership as a driving force, namely if a high-performing company is the finish line then leadership is the engine [40]. The word lead means to provide guidance, guide, direct, and walk in front (ahead) [17]. Leaders behave to help the organization with maximum ability to achieve goals. Various opinions above, can it be concluded that leadership in construction work is the ability of a person in a construction work implementation organization to direct and control construction work in order to achieve organizational goals [21], [22], [35].

F. Research Framework

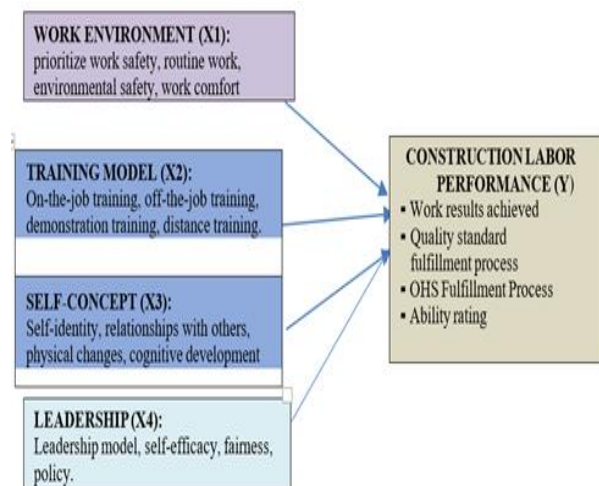


Figure 1 Research Framework

III. RESEARCH METHODS

A. Research Subject

the research activities were carried out on several ongoing construction works in Palu city in fiscal year 2023. The location of Palu city is located in the lowlands with an average altitude of + 84 masl, located at 2o22' LU and 3o48' LS, and 119o22' and 119o22' LU. 124o22' East Longitude. The area of Palu city has an area of 395.06 km². The research survey was conducted at eight project sites. The description of the work location can be seen in table 3.1.

B. Research Design

This research is a descriptive-correlational research, where researchers try to obtain information related to the phenomena observed at this time [3], [7]. The population used in this study were construction workers (Foreman, Supervisor,

Executor) [8], [9]. The research sample is a saturated sample so that the number is the same as the population. This research has stages as shown in Figure 1 and the total population can be seen in Table 1.

TABLE .1 LOCATION, POPULATION OF RESEARCH AREAS IN PALU CITY

No	Job Name	Location	Popu- lation
1	Civil Works (CW) Airport 2: Works- Reconstruction Of Terminal And Other Buildings Emergency Assistance For Rehabilitation And Reconstruction (EARR) of Mutiara Sis Al-Jufri Airport In Palu	Jln. Abdurrahman Saleh	18
2	Construction of Main Access Road to Huntap 2 Area	Jln. Jabal Nur STQ	5
3	Reconstruction of Inner Ring Road of Palu City 1	Layana Street -Kasubi Street	6
4	Lagarutu Road Improvement	Jln. Lagarutu	7
5	Building Construction and Reconstruction at UNTAD campus locations (39 locations)	Soekarno Hatta Street	18
6	Construction of New Village Office	Jl. KH. Mas Mansur	5
7	Construction of Office of National and Political Unity of Palu City	Jl. WR. Supratman Palu City	6
8	Construction of Talise Village Office	Jl. Letjen Suprpto	5
	TOTAL		77



Figure .2.. Research stages

III.3. Data Collection Methods

Primary data collection is done by filling out a questionnaire that has been prepared and guided at the time of filling in order to obtain valid

results. Secondary data used is data on ongoing construction work along with the location and data of construction workers in the field. The population is the number of implementers and foremen working on construction work with a total of 77 people. Making a questionnaire using the basis of theory and the results of several previous studies. Completing the questionnaire uses a Likert scale and each question has a determination scale, namely value 5 states strongly agree; value 4 states agree, and value 3 states moderately, value 2 states disagree, value 1 states disagree.

expressed strong disagreement. Before distributing the questionnaire, a test was carried out, namely the reliability test and validity test. The reliability test is carried out to show the extent to which a measurement result is relatively consistent if the measurement is repeated two or more times. If the results show an alpha value of more than 60% (0.600), then the questionnaire used as a measuring tool for this study can be declared reliable [7], [12], [14]. Validity test, to calculate whether it is valid or not with computer assistance using SPSS with the level of significance used is 5% [5, 22, 27, 34]. After all questionnaires were collected, data analysis was carried out using. Multiple Linear Regression Analysis test aims to determine how much influence the factors of work environment, training model, self-concept and leadership on the performance of construction workers in Palu city.

IV. RESULT AND DISCUSSION

The validity test was conducted on 20 question items, using the SPSS 25 for windows program and calculations using Microsoft Excel. The results of the validity test calculation show that the overall result of r_{count} is higher than r_{table} (0.2242) so it is concluded that all questions are valid. Based on the results of the reliability test calculation using the Cronbach Alpha formula, the Cronbach's Alpha value > 0.6 is obtained. With the amount of data or question items as many as 23 questions. So it can be concluded that the answers given by respondents are good so that analysis can be carried out.

The characteristics of respondents who filled out the questionnaire were 77 people, reviewed based on gender, age, labor origin, length of work, last education, have a certificate.

A. Multiple Linear Regression

Multiple regression analysis is used to analyze how much the relationship and influence of the independent variable on the dependent variable. Multiple linear regression analysis in this study uses the help of the SPSS program. Multiple linear

regression tests on questionnaires that have been filled out by respondents are carried out to determine the effect of work environment factors (X1), training models (X2), self-concept (X3) and leadership (X4) on the performance of construction workers in Palu city.

a. Determination Coefficient Test (R Test)

Based on the test results, the adjusted R square value is 0.674, so it can be concluded that all independent variables can explain their relationship and influence on the dependent variable by 67.4%. That way it can also be known that the remaining 32.6% is influenced by other factors. The results can be seen in table 3

TABLE 2 R TEST RESULTS

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.833 ^a	0,691	0,674	1,011	2,131

a. Predictors:(Constant Work environment, Training model, Self-concept, Leadership)

b. Dependent Variable: Construction Worker Performance

b. Partial significant test (T test)

Based on table 4.3, it can be explained that the unstandardized coefficients (constant) is a regression constant denoted by B, which means that if there is no change in variable X, then the variable has no additional value where the value is constant, namely B = 1.083. The results of the multiple linear regression equation are as follows: $Y = 1.083 + 0.285 X1 + 0.183 X2 + 0.256 X3 + 0.209 X4$. Where can be described as follows:

- Constant (α) = 1.083. This shows that if the work environment variable, training model, self-concept and leadership are considered constant, then the magnitude of the employee performance variable is 1.083.
- Coefficient (X1) = 0.285. This shows that there is a positive influence between the work environment variable on the workman's performance, which means that if other variables are constant, the workman's performance will increase by 0.285.
- Coefficient (X2) = 0.183 This shows that there is a positive influence between the training model variables on employee performance, which means that if other variables are constant, employee performance will increase by 0.183.

- Coefficient (X3) = 0.256. This shows that there is a positive influence between the variables
- Coefficient (X4) = 0.209. This shows that there is a positive influence between the leadership variables, which means that if other variables are constant, the mason's performance will increase by 0.209.

TABLE 3. PARTIAL SIGNIFICANCE TEST RESULTS (T TEST)

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	1,083	1,337		0,810	0,421
Total_X1	0,285	0,075	0,328	3,801	0,000
Total_X2	0,183	0,059	0,225	3,102	0,003
Total_X3	0,256	0,058	0,325	4,425	0,000
Total_X4	0,209	0,068	0,253	3,047	0,003

Dependent variable: construction worker performance

B..Discussion of various Factors Affecting Construction Workers' Performance

a. Identification of Work Environment Factors (X1) on Construction Worker Performance (Y)

The results of linear regression testing obtained that the work environment factor has a positive and significant effect on the performance of builders, the amount is 0.285 with a significant value of 0.00. In linewith Andi's statement

[1] states that the work environment is a place or work location that makes workers feel safe and not awkward in doing work. The work environment is related to the existence of facilities and infrastructure and social aspects that support workers in carrying out work. The results of field observations found that the work environment where work activities are carried out is quite good and organized because most of the work locations are in the city of Palu so that workers feel comfortable at work. In contrast to the results of previous research conducted by Nirmalawati et al [19], the perception carried out by foremen on several projects in the city of Palu obtained the results of the regression equation, namely $Y = 1.468 + 0.254X1 + 0.193X2 + 0.185X3 + 0.261 X4$. These results indicate that the leadership factor has the strongest influence compared to environmental

factors.

b. Factor Identification of Training Model (X2) on Construction Worker Performance (Y)

The results of linear regression testing obtained information that the training model factor variable has a positive and significant effect on artisan performance. The magnitude of this influence is 0.183 with a significant value of

0.003. Mangkunegara [14] states that the labor training model is influenced by various factors, namely: (1) training goals and objectives must be clear and measurable; (2) instructors must be adequately qualified experts; (3) training materials must be in accordance with the objectives achieved; (4) training methods must be in accordance with the capabilities of the workforce who are participants; and (5) training participants must meet the requirements. From this opinion, it is concluded that to achieve labor performance, the right training model must be used. Similar to the results of previous research conducted by Nirmalawati et al [19] that the training model factor has a positive and significant influence.

c. Factor Identification of Self-Concept (X3) on Handyman Performance (Y)

The results of the multiple linear regression test above show that there is a self-concept factor on artisan performance that has a positive and significant effect. The magnitude of this influence is 0.256 with a significant value of 0.00. In accordance with Sundeen's statement [34] that self-concept is all the ideas, thoughts, beliefs and stances that individuals know about themselves and influence individuals in dealing with others. So that the better a person's self-concept will certainly affect the improvement of his performance. The results of monitoring at the field location show that some artisan workers who have a good self-concept have an influence on their performance at work. In contrast to the results of previous research conducted by Nirmalawati et al [19], the influence of self-concept factors is less strong than work environment factors and leadership factors.

d. Identification of Leadership Factors (X4) on Handyman Performance (Y)

The results of multiple linear regression testing show that leadership factors have a positive and significant effect on the performance of fitters. The magnitude of this influence is 0.209 with a significant value of 0.003. In line with the statement that active transformational and transactional leadership is needed so that groups can experience success in performance [16], [44], in essence both

leadership behaviors can improve performance [25] that as a motor, if a high-performing company is the finish line then leadership is the engine [28]. From the above statement proves that improving the performance of builders is influenced by the leadership that exists in the company. implementation of work. In accordance with the results of previous research [33] which also shows that leadership factors have a strong relationship to the performance of construction workers. [34], [45].

e. Identification of field conditions in the implementation of building works and road works

- Based on a review of the implementation of construction work in the field, it can be seen in figures 4.1 and 4.2 which show that the Work environment factors in the implementation of construction work have been well organized, the initial planning of the work has been made properly and applied in the field. Examples in the placement of materials used, placement of work tools, warehouse office directors keet.
- Leadership has been applied well to the implementation of work in the field, this can be seen from the good communication between supervisors, foremen and skilled construction workers in the field. But from some observations there is still a lack of good communication between the foreman and the supervisor so that the implementation of the work has experienced a slight problem, but it can eventually be resolved.
- Monitoring of skilled workers shows differences in the work performance of each worker. Skilled workers are seen to work well and enthusiastically, in contrast to some workers who do not have a good self-concept.



Figure 3 Lagarutu and Main Access road works in Huntap II Housing



Figure 4. Building work at UNTAD and the Kelurahan Office

V. CONCLUSION

The Simultaneous Research Results Show That the Work Environment Variables (X1), Training Model (X2), Self-Concept (X3) And Leadership (X4) Significantly Affect the Performance of Construction Workers in Palu City With the Results of the Regression Equation $Y = 1.083 + 0.285 X1 + 0.183 X2 + 0.256 X3 + 0.209 X4$. While the Results of the Determination Coefficient Test (R Test) Obtained an Adjusted R Square Value of 0.674 Where All Independent Variables Are Able to Explain the Relationship and Its Effect on the Dependent Variable by 67.4%, the Remaining 32.6% Is Influenced by Other Factors.

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