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THE EFFECT OF NON-EXCUSABLE DELAY FACTORS ON THE COMPLETION OF BUILDING CONSTRUCTION PROJECTS

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Abstract. A problem that often occurs in construction projects is the delay in the implementation process. Various factors cause the delay, but in developing countries such as Indonesia, the dominant delay occurs because the implementing contractor causes it for unforgivable reasons (non-excusable delay). This study aims to determine the influence of the non-excusable delay parameter and the relationship between these factors. The research is quantitative with data collection techniques in the form of unstructured interviews, field observations, and surveys using research questionnaires with the number of respondents obtained as many as 33 people consisting of the owner, construction management consultant, quantity surveyor consultant, and ends with confirmation of the results. Research on the implementing contractor. Data analysis was performed using multiple linear regression analysis. The test results of multiple linear regression analysis show that the non-excusable delay factor can significantly affect the completion of construction projects. The influence of each element is 0.434 units for the lack of contractor competence, 0.067 units for inappropriate implementation planning, and -0.097 for inefficient field management units. And simultaneously, these three factors can significantly increase the project delay value index.

Keywords : Delay; Non-Excusable Delay; Contractor; Construction Project

1. INTRODUCTION

A construction project is an activity or work that involves many parties, including owners, consultants, and contractors, to achieve specific goals with certain costs, quality, and time constraints. It starts with the planning stage and continues through the implementation and maintenance stages [1].

In construction, a delay is a problem that occurs most often [2]. Project delays are a source of problems that often occur in every construction project development. Construction project delays based on the nature and compensation provided can be classified into three parts such as Compensable Delay (CD), Excusable Delay (ED), and Non-Excusable Delay (NED) [3]. The problem of work implementation that often occurs in almost all sectors of the construction work implementation is dominated by work time delays [4]. In Indonesia, delays in construction projects that are dominant are unforgivable delays and are included in the Non-Excusable Delay (NED) category, which are predominantly caused by the implementing contractor as a result of the same delay factor [5]. It can be interpreted that the implementing contractor has no right to demand compensation for any form of delay that occurs.

Non-Excusable Delay (NED) is a delay in which the implementing contractor is fully responsible to the project owner [5]. Of the many factors and indicators of delays in construction projects in Indonesia, three leading indicators often hinder the implementation of construction projects according to the implementing contractor, including the lack of competent engineers in carrying out the work, the lack of required human resources planning, and the lack of monitoring activities for the result of the work implementation [6]. Construction project delays are

also dominantly caused by the low level of work productivity, which is also influenced by the scope of the work environment [7].

It is planned that by the end of 2022, one of the projects in the South Jakarta area, precisely in the Tanjung Barat station area, will complete an apartment by carrying the concept of Transit Oriented Development (TOD) housing. In its implementation until the end of January 2022, there have been projected delays with a deviation value of -10.2327%. A large number with indications of delay factors that have been confirmed from various parties that the delays that occur are caused by the implementing contractor and are classified as work default activities, where work default activities are characterized by deviations in the execution of work from the initial contract [8]. With an indication of the delay, a Show Cause Meeting (SCM) was held in April 2022. The three dominant problems that cause delays are Lack of Contractor Competence, Improper Implementation Planning, and Inefficient Field Management, as shown in Figure 1 [9].

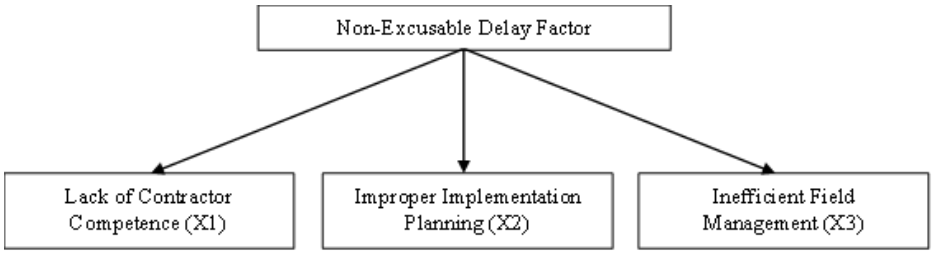

Figure 1. Non-Excusable Delay Factor

Lack of Contractor Competence is affected by the effectiveness of management, and contractor staff is affected by problems such as poor planning and scheduling, lack of supervision during implementation, lack of coordination and communication between related parties, and lack of skilled workers [10]. The impact that may also be caused by the lack of competence of existing contractors is the increase in the number of work accidents due to a lack of knowledge in work supervision [11]. Incompatibility of planning with implementation in the field can result in delays in construction projects [12]. One of the impacts of poor planning is the swelling overhead costs [13]. In preparing good field management, you must make the best possible planning so that the project objectives in terms of price, quality, and time can be completed according to the plan and create a clean and healthy field site by involving all aspects and parties [14].

This research data management will use data analysis methods by using statistical analysis using multiple linear regression analysis models to test every existing problem, such as the influence of the delay factor partially to answer the impact of each delay factor and determine the relationship between delays simultaneously from each delay factor, which exists.

From each of the existing problems, the initial hypotheses that arise are explained in Figure 2.

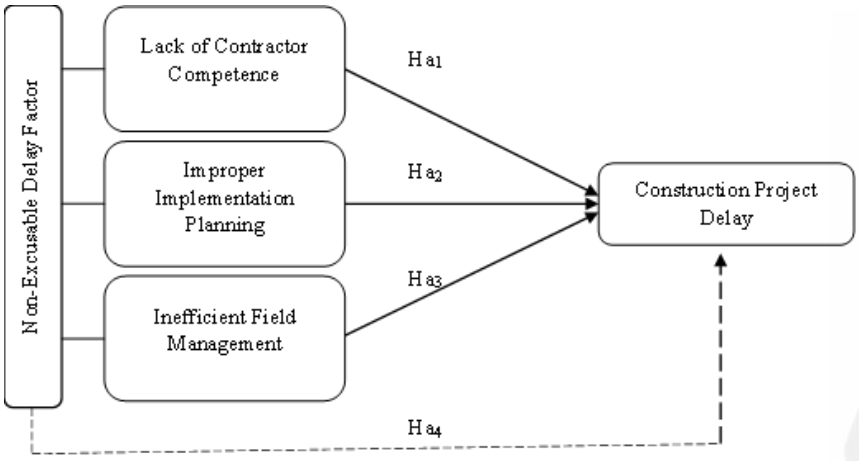

Figure 2. Research Framework

The description of Figure 2 is as follow:

→ The effect of each independent variable on the dependent variable
- - - → The influence of the relationship of independent variables simultaneously on the dependent variable

H_{01} = No significant influence of the lack of Contractor Competence on the Construction Project Delay
Ha_1 = A significant influence of the lack of Contractor Competence on the Construction Project Delay

H_{02} = No significant influence of the Improper Implementation Planning on the Construction Project Delay
Ha_2 = A significant influence of the Improper Implementation Planning on the Construction Project Delay

H_{03} = No significant influence of the Inefficient Field Management on the Construction Project Delay
Ha_3 = A significant influence of the Inefficient Field Management on the Construction Project Delay

H_{04} = No significant simultaneous effect of the lack of Contractor Competence, Improper Implementation Planning and Inefficient Field Management on Construction Project Delays
Ha_4 = A significant simultaneous effect of the lack of Contractor Competence, Improper Implementation Planning and Inefficient Field Management on Construction Project Delays

2. METHODS

The stages of research activities carried out in this study, among others:

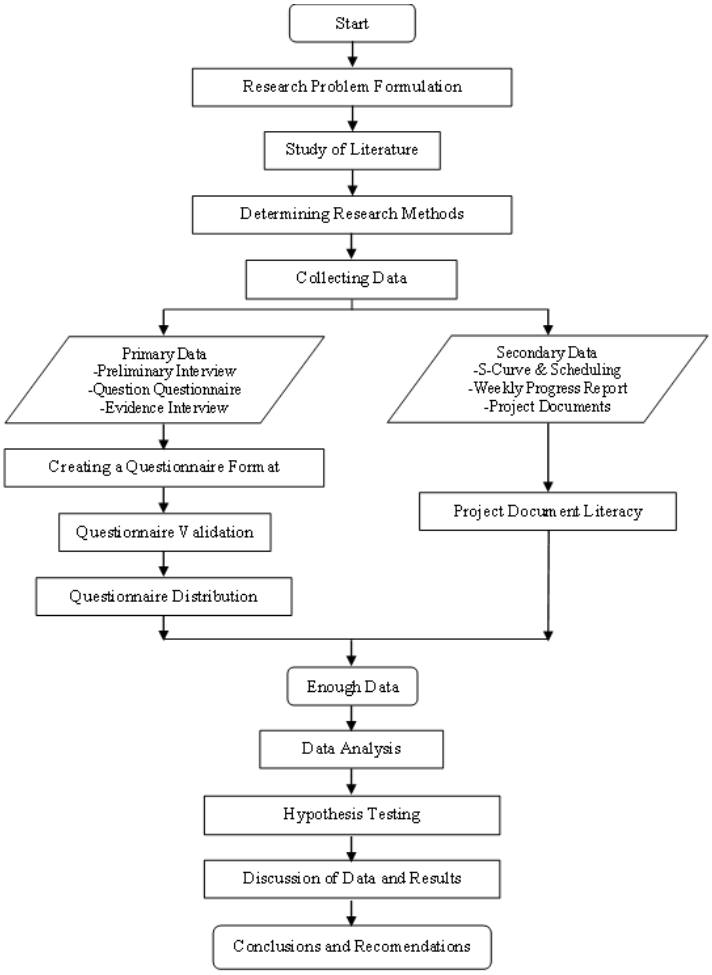

Figure 3. Research Schematic Flow

Two types of data needed for this investigation are primary and secondary data. Then the data collection method used for writing this thesis, namely:

1. Primary Data
   The primary data in this study came from unstructured interviews, preliminary interview results from sheets, and questionnaires from respondents using indicators of factors causing Non-Excusable Delay (NED) delays

and construction project completion.

a. Interview Method
b. Questionnaire Method

2. Secondary Data

Secondary data is information collected from various existing sources [15]. In this study, secondary data were in the form of documents related to the work assessment of contractors, weekly progress of achieving physical implementation in the field, initial contract documents, and the S-curve on the TOD Design Project of Mahata Tanjung Barat.

The population is a generalization area consisting of objects or people selected to be studied because they have specific attributes and characteristics from which conclusions can be made [16]. The population in this study which are incorporated into the research respondents came from the owner, the Constitutional Court consultant, and the QS consultant.

To ensure that the sample represents the size and composition of the population [16], this study is planned to collect as many as 33 research respondents from employees focused on the Rusunami TOD construction project of Mahata Tanjung Barat, which can be seen in the following table.

Table 1. Research Respondents

Position	Quantity
Project Leader	1 Person
Head of Construction Department	1 Person
Head of Planning and Licensing Department	1 Person
Owner Staff	4 Person
Team Leader (Consultant)	1 Person
Architectural Expert (Consultant)	2 Person
Structural Expert (Consultant)	1 Person
MEP Expert (Consultant)	2 Person
HSE Expert (Consultant)	2 Person
Architecture Supervisor (Consultant)	2 Person
MEP Supervisor (Consultant)	2 Person
Administration (Consultant)	1 Person
Owner Staff On Job Training (OJT)	8 Person
Architectural Consultant (QS)	1 Person
Structural Consultant (QS)	1 Person
Total Respondents	**30 Person**

3. RESULTS AND DISCUSSION

Data on the characteristics of research respondents can be seen in the following tables:

Table 2. Characteristics by Gender

No	Gender	Number of Respondents	Percentage (%)
1	Male	24	80%
2	Female	6	20%
	Total	30	100%

It can be seen that as many as 80% of research respondents are male.

Table 3. Characteristics by Age Range

No	Age (Years)	Number of Respondents	Percentage (%)
1	20 – 30	12	40%
2	31 – 40	9	13%
3	41 – 50	5	17%
4	> 50	4	30%
	Total	30	100%

It can be seen that 40% of the research respondents are 20-30 years old.

Table 4. Characteristics Based on Experience

No	Work experience	Number of Respondents	Percentage (%)
1	Housing	6	20%
2	Building < 4 Floor	3	10%
3	Building 4 - 8 Floor	4	13%
4	Building > 8 Floor	17	57%
	Total	30	100%

It can be seen that the experience of respondents in working is dominated by 57% having handled a building project > 8 floors.

Table 5. Characteristics Based on Length of Work

No	Length of work	Number of Respondents	Percentage (%)
1	< 3 years	9	30%
2	3 - 6 years	6	20%
3	7 - 10 years	7	23%
4	> 11 years	8	27%
	Total	30	100%

It can be seen that the dominant research respondents are respondents with more than 11 years of experience in the same position by 27%.

The test results from multiple linear regression analysis to find the existing relationship forms can be seen in the following table:

Table 6. Linear Regression Test Results

		B	Sig.
1	(Constant)	13.466	0
	Lack of Contractor Competence (X1)	0.434	0.087
	Improper Implementation Planning (X2)	0.067	0.802
		-0.097	0.673

	Inefficient Field Management (X3)

It can be seen that the results of the linear regression that has been carried out can be notated into an equation as follows:

$$\hat{Y} = 13.466 + 0.434x_1 + 0.067x_2 - 0.097x_3 \quad (1)$$

Refer to Eq. (1), the evaluation of the results of linear regression analysis

It can also be interpreted that every time there is no influence of the Non-Excusable Delay factor, the delay in the construction project itself has a constant of 13.466 units. If each independent variable affects one unit, it will have an effect of 0.434 units for each X1, 0.067 units for the X2 variable, and -0.097 units for the X3 variable.

And based on the results in the regression test table (Table 6.) above, it can also be seen that each independent variable factor that exists partially does not have a significant effect, characterized by all significance values greater than 0.05.

As for testing the Non-Excusable Delay factor simultaneously, the test results can be seen in the following table:

Table 7. F Test Results (ANOVA)

Model		F	Sig.
1	Regression	3.633	0.026
	Residual		
	Total	3.633	0.026

It can be seen that if the three factors of unforgivable delay occur simultaneously or simultaneously, it will significantly impact the increase in delays that occur. The resulting significance value can prove it is smaller than 0.05.

And to see the dominant factor in each of the existing delay indicators can be seen in the following table:

Table 8. Recapitulation of Descriptive Analysis Results

No	Indicator	Variable	%
1	X1	Lack of contractor's financial capacity (X1.1)	90.0%
2	X2	Inaccuracy of workforce planning (X2.4)	96.0%
3	X3	Lack of work control and monitoring (X3.1)	94.0%
4	Y	Percentage of Plan Completed (PPC) (Y)	97.4%

Based on the tests that have been carried out with 30 research respondents and the confirmation of the results with the implementing contractor, temporary conclusions can be made as follows:

1. Respondents agree with a relatively high average rating above 90% for each variable indicator, each of which is found to be a dominant factor causing delays. And it has been confirmed that the biggest obstacle in the construction of this project is the financial condition still affected by the Covid-19 pandemic.
2. The regression test analysis results obtained a regression equation with the constant value of project delays without the Non-Excusable Delay factor of 13.466 units. Meanwhile, if the three indicators affect the existing variable factors, it will increase by 0.434 for X1, 0.067 for X2, and -0.097 for X3.
3. Unlike the T-Test results, when viewed partially in each of the existing independent variable indicators, there is no significant effect on each Non-Excusable Delay factor.

4. However, if viewed from the results of the F-Test, which was carried out to find the value of the relationship between Non-Excusable Delay factors, it was found that there was a significant influence on the delay that occurred.
5. And the meaning is based on the hypothesis that has been made. When viewed partially for each indicator of the delay factor, the answers H01, H02, and H03 are accepted in the three initial hypotheses, which means that there is no significant partial effect of the Non-Excusable Delay factor indicator that can affect the delay that occurs. In contrast to the simultaneous hypothesis, it can be concluded that Ha4 is accepted, which means that the Non-Excusable Delay factor significantly influences delays in building construction projects.
6. And the confirmation of the research results has been done to the contractor. Indeed, the delay occurred purely because of the existing financial problems. This causes an impact on all elements of the current work units, such as the inability to engineer the addition of overtime hours and the addition of human resources.
7. This means that this study also agrees that the three factors of Non-Excusable Delay, including Lack of Contractor Competence, Improper Implementation Planning, and Inefficient Field Management, affect any increase in the number of construction project delays. As in line with previous research.

4. CONCLUSION

From the results of the discussion of the research that has been done, it can be concluded several things as follows:

1. When viewed partially, Non-Excusable Delay not significantly impact Construction Project Delays (Y). Non-Excusable Delay factors include Lack of Contractor Competence (X1), Improper Implementation Planning (X2), and Inefficient Field Management (X3). Positive X1 and X2 values impact delays, and negative X3 values resulting on the decrase of delays. This means that efforts to suppress the number of uncertainties can be stopped by reducing each indicator between X1 and X2 and increasing X3 indicators, such as improving the coordination of communication relations of each party involved.
2. If viewed partially, the three indicators of the Non-Excusable Delay factor will significantly affect any delays. This means there is a need to develop problem-solving solutions for each of the same detrimental delay factors.

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