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Analysis of The Causes of Delay Completion of Development Projects Workshop Facility - Bekb, Melak, East Kalimantan

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Abstract
Construction projects often suffer from poor performance in terms of execution time management. This is a problem that must be taken seriously. When a delay occurs in a project, there will be additional costs that must be incurred outside the contract and can cause losses for the parties involved, especially the construction contractor. Therefore, it is necessary to pay more attention to the delay in implementation time. The research method used in this research is descriptive quantitative by determining the research variables based on previous journals. Supported by the distribution of phase 1 questionnaires and phase 2 questionnaires which were distributed to 40 respondents related to the Facility Workshop development project located in Melak, East Kalimantan. The questionnaire analysis was assisted by the SPSS version 25 program. The analyzes used were Validity Test, Reality Test, Descriptive Statistical Analysis, Normality Test, Multiple Regression Test, T Test and F Test. From this study, the factors causing delays based on descriptive statistical analysis that meet the requirements of the T-test are material factors (X1), with the indicator "Incorrect material delivery schedule (X1.2)" then supported by the results of multiple linear regression analysis with coefficient positive regression, meaning that there is a significant effect between variables and project delays.

Keywords
BEKB Facility Workshop, Construction Projects, Project Delay Factors, SPSS

1. Preliminary
Construction projects often suffer from poor performance in terms of execution time management. This is a problem that must be taken seriously. When a delay occurs in a project, there will be additional costs that must be incurred outside the contract and can cause losses for the parties involved, especially the construction contractor. Therefore, it is necessary to pay more attention to the delay in implementation time.

Every construction project generally has a specific implementation plan and implementation schedule, when the project implementation should begin, when the project must be completed, how the project will be carried out, and how the resources will be provided. Making a plan for a construction project always refers to the estimates that existed at the time the schedule development plan was made, therefore problems can arise if there is a discrepancy between the plans that have been made and their implementation.

With these resource limitations, a careful and good planning is needed as a guide in implementing the project in order to use time efficiently. To achieve this goal, contractors, developers, and project owners have a project implementation schedule that can simultaneously control the implementation of the project itself.

2. Research Methodology
2.1. Research Location and Time
This research was conducted on a project built by PT. Gatralaras title in the Melak region, East Kalimantan. The project that will be the subject of this research is the construction of a Facility Workshop, which was carried out in 2018

2.2. Data Collection
The data collection required is primary data and secondary data. The primary data in this study were obtained directly from the respondents by distributing questions or questionnaires with the type of multiple choice questions Influential and Not Influential (Guttman Scale) and also with the choices of Strongly Undetermined (STM), Neutral /Don't Know (N/TT) Not Determine (TM), Determine (M), and Strongly Determine (SM) (Likert Scale).

Secondary data is a collection of data and information obtained from the literature and theories that have existed before. Then the previously available data will be used as hypotheses in the process of running this

research. Existing data or commonly called secondary data are obtained from literature books, journals, magazines, newspapers, and others.

2.3. Research Methods

In every research generally carried out with a "research method" so that every step to be taken can be carried out as expected, so that the research can be completed at the decision-making stage. The data analysis method used in this study consisted of five stages, starting with initial expert validation, followed by the distribution of a preliminary questionnaire or questionnaire 1, then distributing the main questionnaire to 40 respondents, then continued with data analysis using SPSS software and finally, expert validation. The tests that will be carried out in this SPSS application are Validity and Reliability Test, Descriptive Statistical Analysis, Normality Test, Multiple Linear Regression Analysis, T Test and F Test, in order to see the results that can be used as a reference in knowing the Causes of Project Delays which will later be reviewed. expert validation first to validate or check the results of the analysis of the delay in the construction of the Facilities Workshop located in Melak, East Kalimantan. The method used in analyzing the data is statistical data analysis.

3. Results and Analysis

3.1. Initial Expert Validation

That is the consultation/validation stage of the preliminary questionnaire containing 40 variables of project delay factors from various aspects to 3 experts. 1 academic expert from Mercubuana Kranggan University and 2 practitioner experts from the Engineering Manager at PT. Gelar Gatralaras.

Tabel 1. Expert Profile

No	Company / University	Degree	Work Experience	Notes
1	PT. Gelar Gatralas	S1	23 Years	Practicioner Expert
2	PT. Gelar Gatralas	S1	12 Years	Practicioner Expert
3	Univ. Mercubuana Kranggan	S2	> 10 Years	Academic Expert

Tabel 2. Intial Expert Validation Result

	Risk Variable	Expert Result			Conclusion
		P1	P2	P3	
X1	Material Factor				
X1.1	Material changes from, function and spesification	No	Yes	Yes	Take Effect
X1.2	Inaccurate material delivery schedule	Yes	Yes	Yes	Take Effect
X1.3	Damage to materials in storage	No	No	No	No Efect
X1.4	Inapproproate manufacturing of building materials	Yes	Ya	Yes	Take Effect
X1.5	Inaccurate time order	Yes	No	Yes	Take Effect
X1.6	Poor material and material management	Yes	No	Yes	Take Effect
X2	Skilled Labor Factory				
X2.1	Lack of Builders	No	Yes	Yes	Take Effect
X2.2	Lack of Workers	Ya	Yes	Yes	Take Effect
X2.3	Lack Of Handyman	No	No	No	No Efect
X2.4	Labor Ability	Yes	Yes	Yes	Take Effect
X3	Equipment Factor				
X3.1	Equipment breakdown	No	Yes	Yes	Take Effect
X3.2	Equipment availability	Ya	Yes	Yes	Take Effect
X3.3	Foreman or operator skills	Yes	No	Yes	Take Effect
X3.4	Equipment productivity	Yes	No	Yes	Take Effect
X3.5	Euipment management error	Yes	No	Yes	Take Effect
X4	Financial Factors				
X4.1	Availability of finance during implementation	Yes	Yes	Yes	Take Effect
X4.2	Fluctuations in the exchange rate of the rupiah agains the dollar	No	No	No	No Efect
X4.3	National economic situation (monetary crisis)	No	No	No	No Efect
X5	Owner Factor				
X5.1	Delay in land preparation	Yes	Yes	Yes	Take Effect
X5.2	Making job changes	No	No	Yes	No Efect
X5.3	Late payment by the owner’s choise	Yes	Yes	Yes	Take Effect
X5.4	Financial difficulties for the owner	Yes	Yes	Yes	Take Effect
X5.5	Design changes by owner	Yes	Yes	Yes	Take Effect
X6	Planning Consultant Factors				
X6.1	Lack of communication between the planner and the owner	Yes	Yes	No	Take Effect
X6.2	Preparation and shop drawing permission	No	Yes	Yes	Take Effect
X6.3	Poor planning	Yes	Yes	Yes	Take Effect
X6.4	Design error	Yes	Yes	Yes	Take Effect
X7	Supervisory Consultant Factors				
X7.1	Project inspection procedure	No	Yes	No	No Efect
X7.2	Preparation of work schedule and revision by supervisory	Yes	No	Yes	Take Effect
X8	Government Factor				
X8.1	Obtaining a permit from the government	No	No	Yes	No Efect
X8.2	Convoluted bureaucracy in project operations	No	No	Yes	No Efect
X8.3	Obtaining a labor permit	Yes	Yes	Yes	Take Effect

3.2. Preliminary Questionnaire

That is the preliminary questionnaire as a result of consultation / validation by 3 experts, where in this preliminary questionnaire the factors have been reduced to 39 factors. In this preliminary questionnaire, 10

respondents will fill out which aims at the trial stage, whether the respondents understand the project delay variable.

Tabel 3. Preliminary Questionnaire Variables

Delay Factor	Code	Risk Variables
Material Factor	X1.1	Material changes in form, function and specifications
	X1.2	Inaccurate material delivery schedule
	X1.3	Inappropriate manufacturing of building materials
	X1.4	Inaccurate time order
	X1.5	Poor material and material management
Skilled Labor Factors	X2.1	Lack of Builders
	X2.2	Lack of Workers
	X2.3	Labor Ability
Equipment Factor	X3.1	Equipment breakdown
	X3.2	Equipment availability
	X3.3	Foreman or operator skills
	X3.4	Equipment productivity
	X3.5	Equipment management error
Financial Factors	X4.1	Availability of finance during implementation
Owner Factor	X5.1	Delay in land preparation
	X5.2	Late payment by the owner's choise
	X5.3	Financial difficulties for the owner
	X5.4	Design changes by owner
Planning Consultant Factors	X6.1	Lack of communication between the planner and the owner
	X6.2	Preparation and shop drawing
	X6.3	Poor planning
	X6.4	Design error
Supervisory Consultant Factors	X7.1	Preparation of work schedule and revision by supervisory consultant while construction is in progres
Goverment Factor	X8.3	Obtaining a labor permit
Technical Factors	X9.1	Error in ground investigation
	X9.2	Geological problem
	X9.3	The condition of the water surface below the ground in the field
	X9.4	Changes in project site conditions
	X9.5	Failure in site investigation
Environmental Factor	X10.1	Social factors
	X10.2	Effect of rain on construction activities

3.2.1. Preliminary Questionnaire Results

Tabel 4. Preliminary Questionnaire Variables Results

CODE	RESPONDENT RESULT										DESCRIPTION QUESTIONNAIRE
	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	
X1.1	4	5	4	5	4	4	4	4	4	5	UNDERSTAND
X1.2	5	5	4	4	4	4	5	5	4	5	UNDERSTAND
X1.3	4	3	3	5	5	4	5	4	4	5	UNDERSTAND
X1.4	4	4	4	4	4	4	4	4	5	4	UNDERSTAND
X1.5	3	4	3	4	5	4	5	4	4	5	UNDERSTAND
X2.1	4	5	4	3	4	5	4	4	5	4	UNDERSTAND
X2.2	4	5	5	4	5	5	5	4	4	5	UNDERSTAND
X2.3	3	4	3	5	5	5	4	4	4	4	UNDERSTAND
X3.1	5	5	4	3	4	5	4	4	4	5	UNDERSTAND
X3.2	5	4	4	4	5	5	4	4	4	5	UNDERSTAND
X3.3	3	2	3	4	4	5	4	4	4	4	UNDERSTAND
X3.4	3	2	3	4	3	5	4	4	4	4	UNDERSTAND
X3.5	4	3	5	4	5	5	4	4	4	5	UNDERSTAND
X4.1	5	5	5	4	4	5	4	5	5	5	UNDERSTAND
X5.1	4	5	4	5	4	5	4	4	4	4	UNDERSTAND
X5.3	3	4	3	5	5	5	4	2	4	4	UNDERSTAND
X5.4	3	4	3	5	5	5	4	2	4	5	UNDERSTAND
X5.5	4	3	3	5	4	5	4	4	5	5	UNDERSTAND
X6.1	3	5	3	5	4	4	4	4	4	5	UNDERSTAND
X6.2	5	5	4	5	5	4	4	4	5	4	UNDERSTAND
X6.3	3	4	4	5	4	4	4	4	5	5	UNDERSTAND
X6.4	5	4	4	5	5	4	3	5	4	5	UNDERSTAND
X7.2	4	3	4	3	5	4	4	4	4	4	UNDERSTAND
X8.3	3	3	3	4	5	4	4	4	4	5	UNDERSTAND
X9.1	2	3	2	3	5	4	5	4	4	5	UNDERSTAND
X9.2	2	2	3	3	5	4	3	4	4	5	UNDERSTAND
X9.3	3	4	4	3	5	4	4	4	4	5	UNDERSTAND
X9.4	4	5	4	3	5	4	4	5	4	4	UNDERSTAND
X9.5	4	5	5	4	5	4	4	5	4	4	UNDERSTAND
X10.1	3	3	5	4	4	4	4	3	5	4	UNDERSTAND
X10.3	3	3	5	2	3	4	3	4	5	5	UNDERSTAND

The results of the distribution of the preliminary questionnaire to 10 respondents, namely all the variables of the delay factors can be understood correctly by all respondents, which means that it can be continued to the stage of distributing the main questionnaire to 40 respondents.

3.3. Main Questionnaire

That is the main questionnaire which is in the same format as the preliminary questionnaire, the difference here is the number of respondents, and aims to obtain data that can be analyzed using SPSS software in order to find out which factors affect project delays.

The number of samples is calculated by the Slovin formula as follows:

$$n = \frac{N}{1 + N(e^2)}$$

n = Number of Samples

N = Total Population of BEKB Facility Workshop Project Staff e = Tolerance Limit (using 5% or 0.05)

$$n = \frac{45}{1 + 45(0{,}05^2)} = 40{,}44$$

Then obtained the number of respondents sample as much as 40 people.

3.3.1. Respondent Profile

The following is a recapitulation of 40 respondents who have filled out the main questionnaire.

Tabel 5. Respondent Profile

No	ProfessionPosition	Degree	Work Experience	Gender	Age (Years Old)
R1	Staff Perencanaan Teknis	D3	< 5 years	Female	21-30
R2	Staff Enggineer	S1	< 5 years	Male	21-30
R3	Staff Enggineer	SMA	< 5 years	Female	21-30
R4	Staff Pengendali	D3	< 5 years	Female	21-30
R5	Quantity Surveyor	D3	< 5 years	Female	21-30
R6	Quantity Surveyor	S1	5 - 10 years	Female	21-30
R7	Quantity Surveyor	D4	5 - 10 years	Female	21-30
R8	Staff Enggineer	D3	< 5 years	Female	21-30
R9	Drafter	SMA	5 - 10 years	Male	21-30
R10	Supervisor	D3	< 5 years	Male	21-30
R11	Drafter	SMA	5 - 10 years	Male	21-30
R12	Drafter	SMA	5 - 10 years	Male	21-30
R13	Supervisor	SMA	5 - 10 years	Male	21-30
R14	Drafter	SMA	5 - 10 years	Male	21-30
R15	Electrical Engineer	D4	5 - 10 years	Male	21-30
R16	Arsitek	S1	5 - 10 years	Male	21-30
R17	Supervisor	D3	5 - 10 years	Male	21-30
R18	Pelaksana	SMA	5 - 10 years	Male	21-30
R19	Staff Enggineer	SMA	5 - 10 years	Male	31-40
R20	Site Manager	S1	10 - 15 years	Male	31-40
R21	Supervisor	S1	< 5 years	Male	21-30
R22	Staff Enggineer	SMA	10 - 15 years	Male	21-30
R23	Admin	SMA	< 5 years	Male	21-30
R24	Site Enginer Officer	SMA	10 - 15 years	Male	21-30
R25	Staff Enggineer	D3	< 5 years	Female	21-30
R26	Staff Enggineer	D4	< 5 years	Female	21-30
R27	Group Leader	D3	10 - 15 years	Male	21-30
R28	Drafter	D3	< 5 years	Female	21-30
R29	Quantity Surveyor	S1	10 - 15 years	Female	21-30
R30	Quantity Surveyor	D3	10 - 15 years	Female	21-30
R31	Quantity Surveyor	S1	< 5 years	Female	21-30
R32	Quantity Surveyor	S2	< 5 years	Female	21-30
R33	Group Leader	S1	20 - 25 years	Male	41-50
R34	Group Leader	S2	20 - 25 years	Male	>50
R35	Group Leader	S1	15 - 20 years	Male	31-40
R36	Staff Enggineer	S1	10 - 15 years	Male	31-40
R37	Site Manager	S1	15 - 20 years	Male	31-40
R38	Admin	S1	10 - 15 years	Male	31-40
R39	Admin	S1	10 - 15 years	Male	31-40
R40	Admin	S1	10 - 15 years	Male	31-40

3.3.2. Respondent Classification

The following is a classification of 40 respondents who have filled out the main questionnaire.

Tabel 6. Classification of Respondents Based on Education

No	Degree	Total
1	SMA	11 people
2	D3	11 people
3	D4	3 people
4	S1	14 people
5	S2	1 people

Tabel 7. Classification of Respondents Based on Work Experience

No	Work Experience	Total
1	< 5 years	14 people
2	5 – 10 years	12 people
3	10 – 15 years	10 people
4	15 – 20 years	2 people
5	20 – 25 years	2 people

Tabel 8. Classification of Respondents Based on Gender

No.	Gender	Total
1	Male	26 People
2	Female	14 People

Tabel 9. Classification of Respondents Based on Age

No.	Age	Total
1	21 - 30 tahun	14 People
2	31 - 40 tahun	12 People
3	41 - 50 tahun	10 People
4	> 50 tahun	2 People

3.4. Validity Test

This validity test was carried out using the SPSS Version 25 software. The purpose of the validity and reliability test was to determine the consistency of an answer. If the instrument used to obtain the data is valid, it means that the instrument can be used to measure what should be measured. Testing the validity of the data is used by using the corrected item total correlation using the r value from the table.

Tabel 10. Validity Test Results

Delay Factor	Code	Pearso Corelation	Table	Validity
Material Factor	X1.1	0,688	0,312	VALID
	X1.2	0,750		VALID
	X1.4	0,645		VALID
	X1.5	0,697		VALID
	X1.6	0,655		VALID
Skilled Labor Factor	X2.1	0,879		VALID
	X2.2	0,918		VALID
	X2.4	0,865		VALID
Equipment Factors	X3.1	0,702		VALID
	X3.2	0,852		VALID
	X3.3	0,645		VALID
	X3.4	0,684		VALID
	X3.5	0,716		VALID
Financial Factor	X4.1	1,00		VALID
Owner Factors	X5.1	0,591		VALID
	X5.3	0,909		VALID
	X5.4	0,807		VALID
	X5.5	0,738		VALID
Planning Consultant Factors	X6.1	0,768		VALID
	X6.2	0,649		VALID
	X6.3	0,650		VALID
	X6.4	0,709		VALID
Supervisory Consultant Factor	X7.2	1,00		VALID
Government Factor	X8.3	1,00		VALID
Technical Factors	X9.1	0,766		VALID
	X9.2	0,829		VALID
	X9.3	0,856		VALID
	X9.4	0,764		VALID
	X9.5	0,813		VALID
Environment Factor	X10.1	0,763		VALID
	X10.3	0,800		VALID

From the results of the validity test, it can be concluded that each indicator has a value of Corrected Item-Total Correlation > from the value of r-table = 0.312. So it can be concluded that all the indicators above can be declared valid..

3.5. Reliability Test

Reliability test was conducted to measure the level of consistency of a questionnaire. Determination of a questionnaire considered reliable or not is the result of the alpha value of the test results. To see the level of reliability based on Cronbach's Alpha value, it can be seen in the following table tabel :

Tabel 11. Reliability Level

Alpha	reliability level
0.00 s.d 0.20	less reliable
> 0.20 s.d 0.40	somewhat reliable
> 0.40 s.d 0.60	reliable enough
> 0.60 s.d 0.80	reliable
> 0.80 s.d 1.00	very reliable

The results of the reliability test can be seen in the following table :

Tabel 12. Reliability Test Results

No.	Variable	r Table	Cronbach's Alpha	N of item	Notes
X1	Material Factor	0,312	0,712	5	Reliable
X2	Skilled Labor Factors	0,312	0,864	3	Very Reliable
X3	Equipment Factors	0,312	0,771	5	Reliable
X4	Financial Factors	0,312	1	1	Very Reliable
X5	Owner Factors	0,312	0,793	4	Very Reliable
X6	Planning Consultant Factors	0,312	0,623	4	Reliable
X7	Supervisory Consultant Factors	0,312	1	1	Very Reliable
X8	Goverment Factors	0,312	1	1	Very Reliable
X9	Technical Factors	0,312	0,863	5	Very Reliable
X10	Environment Factors	0,312	0,363	2	Quite Reliable

The results of the reliability test obtained that Cronbach's Alpha value was on average more than the r table value on validity testing > 0.312. So it can be concluded that the instrument in this study is reliable or consistent.

3.6. Descriptive Statistical Analysis

Through descriptive statistical analysis, a brief overview will be obtained of the sub-factors causing delays that have the highest scale on the project as seen from the highest total score for each variable. The results of descriptive analysis will be presented in each variable.

Tabel 13. Descriptive Analysis Results

Delay Factor	Kode	Mean	Median	Mode	Sum
Material Factor	X1.1	4.18	4.00	4.00	167
	X1.2	4.38	4.00	4.00	175
	X1.3	4.25	4.00	4.00	170
	X1.4	4.08	4.00	4.00	163
	X1.5	4.08	4.00	4.00	163
Skilled Labor Factors	X2.1	4.15	4.00	4.00	166
	X2.2	4.13	4.00	4.00	165
	X2.3	3.98	4.00	4.00	159
Equipment Factors	X3.1	3.95	4.00	4.00	158
	X3.2	4.03	4.00	4.00	161
	X3.3	3.95	4.00	4.00	158
	X3.4	3.83	4.00	4.00	153
Financial Factors	X3.5	4.03	4.00	4.00	161
	X4.1	4.33	4.00	4.00	173
Owner Factors	X5.1	4.20	4.00	4.00	168
	X5.2	4.15	4.00	5.00	166
	X5.3	4.15	4.00	4.00	166
	X5.4	4.35	4.00	4.00	174
Planning Consultant Factors	X6.1	4.05	4.00	4.00	162
	X6.2	4.18	4.00	5.00	167
	X6.3	4.25	4.00	4.00	170
	X6.4	4.30	4.50	5.00	172
Supervisory Consultant Factors	X7.2	3.98	4.00	4.00	159
Government Factor	X8.3	3.93	4.00	4.00	157
Technical Factor	X9.1	3.73	4.00	4.00	149
	X9.2	3.75	4.00	4.00	150
	X9.3	3.83	4.00	4.00	153
	X9.4	3.93	4.00	4.00	157
	X9.5	3.93	4.00	4.00	157
Environment Factors	X10.1	3.60	4.00	4.00	144
	X10.2	3.75	4.00	4.00	150

Based on the data above, the indicator that has the highest score is in the category of material factors for the X1.2 indicator, namely the inaccuracy of the material delivery schedule with a total score of 175 with an average value of 4.38, this concludes that based on descriptive statistical analysis, the most dominant factor The factor that caused the delay in the construction of the Workshop Facilities in Melak, East Kalimantan was the material factor (X1).

3.7. Normality Test

The Kolmogorov-Smirnov normality test is part of the classical assumption test. The normality test aims to determine whether the residual value is normally distributed or not. A good regression model is to have residualsthat are normally distributed.

Decision making basis :

The score given for the variable X statement is:

1. If the significance value is > 0.05 then the residual value is normally distributed.

2. If the significance value is < 0.05 then the residual value is not normally distributed.

Tabel 14. Kolmogorov-Smirnov Normality Test Results

One-Sample Kolmogrov-Smirnov Test		
N		40
Normal Parameters	Mean	.0000000
	Std. Deviation	.34367007
Most Extreme Differences	Absolute	.124
	Pasitive	.087
	Negative	-.124
Test Statistic		.124
Asymp. Sig. (2-tailed)		.125c

a. Test distribution is Normal
b. Calculated from data
c. Lilliefors Significance Correction

Based on the results of the normality test, it is known that the significance value is 0.125 > 0.05, so it can be concluded that the residual value is normally distributed.

3.8. Multiple Linear Regression Analysis

Linear regression analysis is a tool with several important applications. It is also a set of statistical procedures that are always used to explain the linear relationship between two or more independent variables (X1, X2,….Xn) and the dependent variable (Y).

This analysis is to determine the direction of the relationship between the independent variable and the dependent variable whether each independent variable is positively or negatively related and to predict the value of the dependent variable if the value of the independent variable increases or decreases. Multiple linear regression equation as follows :

Y' = a + b1X1+ b2X2 +…..+ bnXn
Information :
Y' = Dependent variable (predicted value) X1 and Xn = Independent variable
A= Constants (the value of Y' if X1, X2…..Xn = 0)
B= Regression coefficient (increase or decrease value)

3.9. T Test

The t-test was conducted with the aim of whether the independent variables individually affect the delay. In this study, the t-test was carried out using SPSS 25. Determination of the results of the t-test can be seen if the t-count value is greater than t-table, then the independent variables individually have an effect on project delay.

The following are the results of the validity test based on the variables :

1. Determining the Hypothesis
   Ho : Partially there is no significant effect between variable X and Variable Y.
   Ha : Partially there is a significant effect between variable X and Variable Y. Determining the level of significance
2. The level of significance using = 5%
3. Determining T count: based on the results of SPSS calculations.
4. Determine the T table
   The t distribution table is searched at = 5%: 2 = 2.5% (2-sided test) with degrees of freedom (df) nk-1 or 40-31-1 = 8 (n is the number of samples and k is the number of independent variables) .
   = t (α / 2 ; n – k – 1)
   = t (0,05/2 ; 40 – 10 – 1)
   = t (0,025 ; 29)
   = 2.045 (t table value)
5. Test Criteria
   Ho is accepted if t table > t count Ho is rejected if t table < t count

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Tabel 15. T Test Analysis Results

Coefficients[a]						
Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Betta	t	Sig.
1	(Constant)	.768	.644		1.193	.243
	TOTAL_X1	.167	.039	.661	4.240	.000
	TOTAL_X2	.081	.048	.272	1.682	103
	TOTAL_X3	-.022	.043	-950	-.506	.617
	TOTAL_X4	.1338	.101	.160	1.358	.185
	TOTAL_X5	-.062	.032	-.250	-1.940	.062
	TOTAL_X6	.049	.044	.172	1.116	.274
	TOTAL_X7	.169	.139	.206	1.209	236
	TOTAL_X8	-.062	.107	-.780	-.575	.569
	TOTAL_X9	-.068	.028	-.405	-2.433	.021
	TOTAL_X10	.008	.049	.021	.169	.867

a. Dependent Variable : Y

From the data above, it can be concluded that if the results of the t-test there are independent variables that partially have a significant effect on the dependent variable, namely X1 or in a variable manner, namely Material Factors (Material).

3.10. Uji F

The f-test was conducted with the aim of whether the independent variables jointly affected project delays. In this study, the f-test was carried out using IBM SPSS Statistics version 25. The determination of the f-test results can be seen if the f-count value is greater than the f-table, then the independent variables together have an effect on project delays:

Tabel 15. F Test Analysis Results

ANOVA						
Model		Sum of squares	df	Mean Square	F	Sig.
1	Regression	10.812	10	1081	6.871	.000[b]
	Residual	4.563	29	.157		
	Total	15.375	39			

a. Dependent Variable: Y
b. Predictor: (Constant), Total_X10, TOTAL_X7, TOTAL_X4, TOTAL_X5, TOTAL_X1, TOTAL_X8, TOTAL _X6, TOTAL_X9, TOTAL_X3

The following are the results of the validity test based on the variables :

1. Determining the Hypothesis
   Ho : There is no significant effect between X1, X2,….Xn together on project delays.
   Ha : There is a significant effect between X1, X2,….Xn together on project delays.
2. Determining the level of significance
   Significance level using = 5% (significance 5% or 0.05 is a standard measure that is often used in research)
3. Determine F count.
   From the output of IBM SPSS Statistics version 25, it can be seen that the f-count is 6,871.
4. Determine the F table
   By using the 95% confidence level, = 5%, and using the formula: f (k ; n - k) where n is the number of respondents and k is the number of independent variables.
   = f (10; 40-10)
   = f (10 ; 30)
   = f table 2,16 (table attached).
5. Test Criteria
   Ho is accepted if t table > t count.
   Ho is rejected if t table < t count.

6. Comparing calculated F with F table

The calculated F value > F table (6.871 > 2.16), then Ho is rejected.

Because F count > F table (6.871 > 2.16), then Ho is rejected, which means that the independent variables in this study jointly affect project delays. So from this case it can be concluded that X1, X2, X3….Xn together have an effect on Y.

3.11. Expert Validation

Validation of this stage is given to experts who are experienced in the field of building construction. This expert validation aims to find out and ask for expert opinions on how to deal with delays in known variables.

Tabel 16. Expert Validation Opinions

	Opinion	
Expert Practitioner 1	Agree	There are several factors that cause delays in the arrivalof materials to the project site unfavorable environmental conditions, as well as the very long distance of material mobilization, approximately 5 hours drive Lack of stock of materials, far from the planned receipt, meaning that the request is not in accordance with the delivery
Expert practitioner 2	Agree	This happen because: Incorrect material selection error Lack of planning in ordering materials, resulting in delays in procurement Wrong choice of expendition and lack of monitoring during delivery
Academic Expert	Agree	The delay in the delivery of materials or raw materials is indeed a source of problems for project delays in general. Some materials can be anticipated for procurement, but there are no delays

Tabel 17. Expert Validation Suggestions

	Suggestion
Expert Practioner 1	1. planning for material orders can be done ahead of time 2. there should be no monopoly on purchasing materials, especially natural materials 3. sufficient and adequate means of mobility 4. request adjusted with delivery
Expert practioner 2	1. The use of materials that are ready in the field / on the market 2. orders are tried long before the implementation 3. monitor when delivery is carried out so that you can anticipate problems during delivery
Academic Expert	There are several material delays that can be anticipated by doing stock first (buffer strock)

4. Conclusion

From the results of the analysis and discussion of the problem formulation, the following conclusions are obtained :

1. Based on the results of questionnaires to 40 respondents and statistical analysis testing was carried out using the analytical method, from several variables causing delays in the Workshop Facilities construction project located in Melak, East Kalimantan, the most influential variable on the causes of delays, namely Material Factors (Material) (X1) with the indicator "Inaccurate schedule of delivery of materials (X1.2)" which is supported by the results of the calculation of the Descriptive Statistics analysis of the total value and mean value on the X1.2 indicator which has the largest result with a total value of 175 and a mean of 4.38, then supported by the results of multiple linear regression analysis with a value of 0.167 positive regression coefficient, meaning that there is a significant effect between variables and project delays.

2. Steps used to overcome the inaccuracy of material delivery schedule in a project is planning material ordering can be done far - far in advance. The use of materials that are ready in the field / on the market also makes it easier to find materials to be sent, as well as monitor when delivery is carried out in order to anticipate problems during delivery.

5. Suggestions

Based on the results of the analysis that has been carried out and the conclusions, it can be suggested as follows :

Construction service companies that will carry out the project, should pay attention to the problem of planning material procurement (schedulle, volume, etc.), so that delays in material delivery that occur in the project can be overcome. Planning and scheduling the procurement of appropriate construction materials includes planning the

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