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ANALYSIS OF FACTORS CAUSED FOR DELAYING CONSTRUCTION ROAD REHABILITATION AND MAINTENANCE IN KEJAYAN PURWOSARI'S (LINK 197) PROJECT DUE TO COVID-19 PANDEMIC

Ardhi Ramadhani[1*], Haris Muhammadun[2], Wateno Oetomo[3]
[1,2,3]Faculty of Engineering, University 17 Agustus 1945 Surabaya
E-mail: [1)] 1472000050@untag-sby.ac.id

Abstract

Implementation of Construction Projects that run within a limited time must be removed from the factors that cause project delays to run optimally and appropriately. This study aims to analyze the factors causing delays in road rehabilitation and maintenance in Kejayan Purwosari (Link 197) construction projects due to the Covid-19 pandemic. The study population consist of 80 people and the number of research samples is the total population. The data collection technique is done by distributing questionnaires. Techniques for analyzing research data using Partial Least Square (PLS). The results of the study prove that the factors of Manpower, Materials and Equipment have no significant effect on Project Delay. Meanwhile, the factors of Construction Method, Relationship and Time and Control have a significant effect on Project Delay.

Keywords: Covid-19, Factors Causing Delays, Project Delays, Road Rehabilitation

1. INTRODUCTION

A construction project is a series of actions that are performed once, are typically short-term, and have a distinct beginning and finish date. In this sequence of operations, project materials are transformed into a single work in the form of structures (Hendriko, 2016). The implementation of construction projects is carried out with various interrelated activities so that if one activity is hampered it will affect other activities.

In a construction project, good and directed management is needed because a project has limitations so that the ultimate goal of a project can be achieved. The required project management includes three things known as the three project constraints (triple constraints), namely cost, time, and quality (Widyarsana, 2015). These three boundaries affect each other in a project and have a very important role in project implementation. Successful project performance is the main target for companies engaged in construction services.

The project is said to be successful is a reflection of the results of the company's performance. A project is said to be successful if the project is able to be completed at a competitive cost, able to be completed on time even faster than the scheduled time, and with the achievement of quality (Brahmantariguna, 2015). Given the complexity and complexity of construction projects, good management functions are needed, namely planning activities, implementation activities, and control activities. A project is categorized as successful if it is right on cost, on time, and according to quality. These three constraints are a measure of the success of a project.

In January of 2020, the World Health Organization (WHO) stated that an outbreak of a new disease caused by the Corona Virus had occurred in the province of Hubei in China. This outbreak was designated as a Public Health Emergency of International Concern (PHEIC) by WHO. In March 2020, Indonesia announced the first case of Covid-19 in Contractor Road Rehabilitation and Maintenance in Kejayan Purwosari (Link 197). With the government's policy of restricting community activities due to the increasing outbreak of the Covid-19 pandemic in Indonesia, this greatly affects the daily mobility of people and all sectors of the world of work, including construction work. Almost all construction project activities throughout Indonesia experience delays or deviations (Aji & Yudha, 2021).

The impact of the Covid-19 virus pandemic greatly affects the implementation method in the field because the regulations implemented by the government make it difficult to mobilize in the project area, as well as increased costs due to the lack of stock material production and limited mobilization. These are the main impacts on delays in the implementation of construction projects. As a consequence of this pandemic, the Minister of Public Works and Public Housing published Ministerial Instruction Number: 02/IN/M/2020 concerning the Protocol to Prevent the Spread of Corona Virus Disease 2019 (Covid-19) in the Implementation of Construction Services (Aji & Yudha, 2021).

The COVID-19 pandemic caused many problems in project implementation. Since the beginning of 2020 until now the corona virus disease (covid-19) outbreak has played a role in hampering the process of implementing construction projects. The Batam City Marina-Simpang Base Camp Road Improvement Project shows that the factors that hinder project completion are weather factors, worker restrictions (social distancing), cessation of the process of goods and services caused by the decline in government circulars (Rossela & Mahfuz, 2021).

Construction activities during the COVID-19 pandemic which also hit our country have limited activities, even if they run, health protocols must be carried out in each implementation and will certainly have an impact on project delays. Delays in completing this construction project will cause losses for both the contractor and the owner (Boy et al., 2021).

From the description above, this study was carried out which aims to determine the factors causing delays in the Road Rehabilitation And Maintenance in Kejayan Purwosari (Link 197) construction project due to the covid-19 pandemic. By knowing these constraining factors, all parties involved can determine what solution/strategy should be done so that no party is harmed.

2. THEORETICAL FOUNDATION

2.1. Construction Project

According to Dimyati & Nurjamanuddin (2014), a construction project is a construction implementation activity that is limited by time, quality, and cost. The components of this project consist of feasibility assessment, engineering design, procurement and construction. Implementation of construction projects in the form of building construction, dams and irrigation, ports, roads, and others. A construction project is an arrangement of activities carried out by a business entity with the aim of constructing a building and is limited by cost, quality, and time. Construction projects consist of main work in the fields of civil

engineering and architecture, as well as work that includes mechanical engineering, electrical engineering, geological engineering, and others. This construction project work has a very complex nature and involves the use of resources in the form of human labor, materials, equipment and large amounts of costs.

A construction project is a work activity whose implementation is carried out in a relatively short and limited time. Where construction activities there is a process in processing project resources (manpower, materials, machines, methods, and money) into a physical building. There are several characteristics of construction projects which contain three elements, namely being unique, requiring organization, and having resources (Ervianto, 2005).

In the process of achieving the construction objectives, there are three important parameters for project organizers who are often associated as project targets, namely Cost, Time, and Quality. A construction project's performance can be evaluated based on its cost, quality, and completion time. The performance of a project is determined by comparing the actual outcomes to the estimated results in the work contract agreed upon by the owner and the implementing contractor.

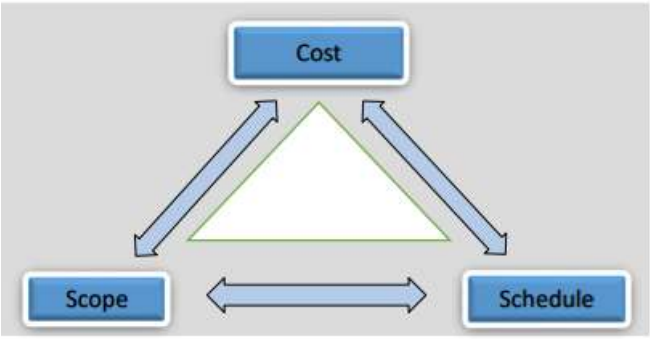

Figure 1 Triple Constraint

2.2. Delayed Project

According to Boy et al., (2021), project delays are caused by several factors originating from the Contractor, Owner, and other than the two parties as follows:

1. Delays due to contractor errors, including:
   a. Delay in starting project implementation.
   b. Less experienced workers and implementers.
   c. Late delivery of equipment.
   d. Inactive foreman
   e. Poor work plan
2. Delay due to Owner's error:
   a. Late installment payments by contractors
   b. Land provider is late
   c. Holding a major employee change
   d. Owner assigns another Contractor to work on the project
3. Delays caused by other than the two parties above, among others:
   a. Due to fire that is not the fault of the Contractor, Consultant and Owner.

b. Due to war, earthquake, flood, or other disasters.
c. Monetary changes

2.3. Project Delay Factors

According to Boy et al., (2021), project delays are influenced by the following factors:

1. Labor aspect
   a. Shortage of labor
   b. Work accidents that occur to workers
   c. Low ability of the workforce
2. Material aspect
   a. Lack of materials
   b. Material management error
   c. Sources of materials originating from abroad
   d. Market price difference
   e. Material delivery delay
   f. Inaccurate order time
3. Tool aspect
   a. Lack of tools
   b. There is damage to the tool
   c. Tool productivity that is less than the maximum
4. Construction method aspect
   a. Improper schedule planning
   b. Poor job execution
   c. Incomplete identification of the type of work
   d. Less than the maximum work productivity
5. Finance aspect
   a. Delay in the payment process by the owner
   b. Availability of finance during implementation
   c. There is no intensive money for contractors if the work is completed faster
6. Change aspect
   a. Added scope of work
   b. Change of scope of work by planning consultant
   c. Inappropriate contractor initial survey
   d. Negotiations and agreements on contracts
7. Relationship aspect
   a. Conflict between contractor and supervising consultant
   b. Sub-contractor schedule differences in completion
   c. Delay in handing over the work from the owner to the contractor
   d. Lack of supervision by the owner
   e. Lack of coordination between owner and contractor
   f. Negotiating agreements on contracts
8. Environment aspect

a. Natural disasters (floods, landslides)
b. Hard-to-reach project locations
c. Project environmental security effects
d. Effect of hot air on project activities

Meanwhile, according to Assaf in Aji & Yudha (2021), project delays are influenced by:

1. Contract factors, which consist of:
   a. There is a dispute between the contractor and the consultant.
   b. There is no cooperation between the contractor and the owner.
   c. Decision making by the old owner.
   d. Negotiation and licensing of contracts.
   e. There are work conflicts between different parts of the project.
   f. Poor communication between the owner and the planner.
2. Time and control factors, which consist of:
   a. Preparation of work schedules and revisions by consultants while construction is in progress
   b. Inspection and testing system in the project.
   c. Some signs of practitioner control on work within the project site.
   d. Lack of experienced manpower and management to support construction implementation.
   e. There were various kinds of problems during the project implementation process.
   f. There are differences in the initial project planning that has been agreed upon.
   g. Preparation and permission of shop drawings.
   h. Long waiting for permission for material control

2.4. Impact of Project Delay

Impact of Delay Project delays are often a source of disputes and demands between the owner and contractor, which causes the project to be delayed from the side of the owner and contractor, which makes the value very expensive. In addition, the contractor will be subject to a fine according to the contract. The contractor also incurs additional costs during the project. From the owner's point of view, project delays will result in a decrease in income due to delays in the operation of the facility. Based on these reviews, competent project managers usually take wise steps, namely trying to accelerate project activities if there are signs of project delays due to delays in one of the critical or non-critical activities. Not only the owner and contractor who received the impact of the delay but also experienced by the consultant. The impacts experienced by each party are as follows:

1) The owner

Delays that occur in the project will be very detrimental to the owner because it will increase the cost of spending on the building to be built. Buildings that should be able to be used, leased, or sold must be hampered because the project is still under construction. If the government plans the construction of public facilities such as schools, hospitals, roads, buildings, and others, it will certainly harm the service program to the community.

2) Consultants

The impact of project delays on the consultant is that the consultant will experience a loss of time because the work that must be done by the consultant for other projects will be hampered due to delays in the project development process. So, the schedule that has been prepared by other projects will also be late.

3) Contractors

Projects that experience delays will experience overhead, due to the increased implementation time of project development. Overhead costs include the overall costs borne by the company and regardless of the contract being undertaken.

2.5. Impact of COVID-19 on Projects

Concerning infectious disease control policies, Indonesia has Law No. 4 of 1984 on Outbreaks of Infectious Diseases, Government Regulation No. 40 of 1991 on Infectious Disease Control, and Minister of Health Regulation No. 1501 / Minister / X / 2010 on Types of Infectious Diseases. In order to prevent the COVID-19 virus, the Minister of Health has issued Decree of the Minister of Health Number HK.01.07/MENKES/328/2020 on Guidelines for the Prevention and Control of Corona Virus Disease 2019 (COVID-19) in Office and Industrial Workplaces in Supporting Business Continuity During a Pandemic. The Indonesian government has released Presidential Regulation Number 11 of 2020 on the Determination of Public Health Emergency 2019 24 Coronavirus Disease 2019 (COVID-19).

The Presidential Decree recognizes COVID-19 as a disease that poses a threat to public health and declares a COVID-19 Public Health Emergency (KKM) in Indonesia. Preventing KKM requires a health quarantine at both the entrance and the worksite. After performing in-depth research, Indonesia devised a policy of adopting Large-Scale Social Restrictions (also known as PSBB), which eventually evolved into the Enforcement of Community Activity Restrictions (also known as PPKM) in Java-Bali to prevent the spread of COVID-19. During the PSBB, there are health protocols that serve as recommendations for sustaining the community's health so that they can continue out daily activities.

2.6. Conceptual Framework

To facilitate the process of analysis in research, researchers make a research framework. The following is the research framework in this study, namely:

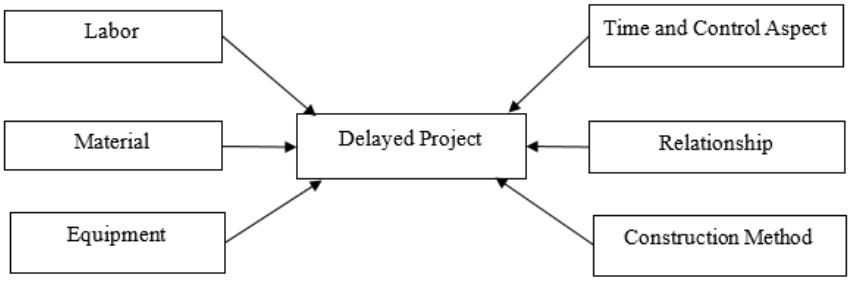

Figure 2 Conceptual Framework

3. RESEARCH METHOD

The research was carried out using a quantitative approach in the form of field surveys or field studies. The research approach used was quantitative methods. The type of data used in this study was quantitative, because the collection was in the form of numbers obtained from questionnaires.

In this study, the study population consist of 80 people. Given that the population was less than 100 people, the number of samples to be used was as much as the total population of 80 people. This study utilizes primary data gathered from the questionnaire distribution results as its data source. The Structural Equation Model (SEM) will be used to evaluate the data and test the hypotheses in this study. To respond to the hypothesis, we employed Partial Least Squares (PLS).

4. RESULTS AND DISCUSSION

4.1. Analysis Results

4.1.1. Convergent Validity

If the indicator's loading factor is > 0.50, it is considered convergently valid. The indicator's outer loading value is summarized below.

Table 1 Validity Test (Convergent Validity)

Variable	Item	Original Sample	P-Values	Note
Labor (X1)	X1.1	0,918	0,000	Valid
	X1.2	0,905		
	X1.3	0,951		
Material (X2)	X2.1	0,763		
	X2.2	0,542		
	X2.3	0,702		
	X2.4	0,755		
	X2.5	0,839		
	X2.6	0,720		
Equipment (X3)	X3.1	0,902		
	X3.2	0,881		
	X3.3	0,822		
Construction Method (X4)	X4.1	0,581		
	X4.2	0,907		
	X4.3	0,877		
	X4.4	0,804		
Relationship (X5)	X5.1	0,839		
	X5.2	0,784		
	X5.3	0,920		
	X5.4	0,859		
	X5.5	0,871		

Variable	Item	Original Sample	P-Values	Note
Time & Control Aspect (X6)	X6.1	0,681		
	X6.2	0,664		
	X6.3	0,787		
	X6.4	0,850		
	X6.5	0,736		
	X6.6	0,874		
	X6.7	0,809		
	X6.8	0,845		
	X6.9	0,681		
Delay Project (Y)	Y1	0,760		
	Y2	0,896		
	Y3	0,891		
	Y4	0,765		
	Y5	0,921		

Source: Processed Data

On the basis of the convergent validity test provided in Table 1, it is known that all indicators have convergent validity values > 0,5, making them all usable.

4.1.2. Discriminant Validity

If the value of the cross loading indicator on the variable is greater than the value of the indicator when compared to other variables, then the indicator is said to meet the criteria for discriminant validity.

Table 2 Cross Loadings

Item	X1	X2	X3	X4	X5	X6	Y
X1.1	0,918	-0,177	0,757	0,721	0,719	0,716	0,703
X1.2	0,905	-0,182	0,759	0,604	0,708	0,697	0,649
X1.3	0,951	-0,135	0,785	0,696	0,767	0,743	0,707
X2.1	-0,167	0,763	-0,116	-0,151	-0,057	-0,026	-0,144
X2.2	-0,113	0,542	-0,016	-0,103	-0,022	-0,033	-0,053
X2.3	-0,107	0,702	0,020	-0,010	-0,040	-0,045	-0,100
X2.4	-0,083	0,755	-0,074	-0,138	0,004	-0,029	-0,137
X2.5	-0,139	0,839	0,018	-0,215	-0,098	-0,095	-0,174
X2.6	-0,170	0,720	-0,119	-0,116	-0,144	-0,088	-0,112
X3.1	0,697	-0,009	0,902	0,604	0,689	0,618	0,656
X3.2	0,772	-0,102	0,881	0,598	0,679	0,668	0,662
X3.3	0,692	-0,064	0,822	0,673	0,453	0,526	0,560
X4.1	0,534	-0,097	0,561	0,581	0,355	0,479	0,407

X4.2	0,691	-0,128	0,709	0,907	0,574	0,583	0,701
X4.3	0,629	-0,216	0,569	0,877	0,587	0,646	0,710
X4.4	0,481	-0,124	0,461	0,804	0,443	0,460	0,536
X5.1	0,665	0,012	0,622	0,482	0,839	0,725	0,628
X5.2	0,570	-0,079	0,464	0,441	0,784	0,589	0,570
X5.3	0,756	-0,081	0,686	0,562	0,920	0,826	0,770
X5.4	0,621	-0,072	0,544	0,582	0,859	0,725	0,724
X5.5	0,753	-0,133	0,681	0,583	0,871	0,808	0,762
X6.1	0,544	-0,255	0,431	0,509	0,575	0,681	0,544
X6.2	0,627	0,027	0,676	0,601	0,520	0,664	0,610
X6.3	0,677	-0,098	0,516	0,486	0,713	0,787	0,583
X6.4	0,690	-0,100	0,499	0,520	0,748	0,850	0,638
X6.5	0,590	0,091	0,691	0,590	0,617	0,736	0,668
X6.6	0,625	-0,044	0,511	0,461	0,775	0,874	0,685
X6.7	0,613	-0,149	0,514	0,587	0,709	0,809	0,745
X6.8	0,524	0,024	0,540	0,507	0,742	0,845	0,717
X6.9	0,584	-0,057	0,588	0,480	0,738	0,744	0,760
Y1	0,700	-0,158	0,659	0,702	0,763	0,768	0,896
Y2	0,725	-0,208	0,698	0,711	0,677	0,730	0,891
Y3	0,458	-0,219	0,458	0,628	0,522	0,550	0,765
Y4	0,656	-0,115	0,640	0,663	0,735	0,728	0,921
Y5	0,918	-0,177	0,757	0,721	0,719	0,716	0,703

Source: Processed Data

According to the cross loading values in Table 2, each indicator in the research variable has a greater cross loading value on the variable it creates than on other variables. Therefore, it can be asserted that the indicators utilized in this study show high discriminant validity in the compilation of their respective variables.

If the AVE value > 0.5, it is deemed satisfactory. The AVE test results are displayed in Table 3 as follows:

Table 3 AVE Value

Variable	AVE
Labor (X1)	0,915
Material (X2)	0,827
Equipment (X3)	0,838
Construction Method (X4)	0,807
Relationship (X5)	0,908
Time & Control Aspect (X6)	0,909
Delayed Project (Y)	0,901

Source: Processed Data

The findings of the AVE value for the indicator block that measures the construct can be claimed to have a good discriminant validity value since the AVE value is > 0.5. The reason for this is that the AVE value allows for this declaration. The remainder of the construct variable is then declared to have good discriminant validity as a whole.

4.1.3.Composite Reliability

If a variable's composite reliability value is > 0.70, then the variable can be declared to meet the composite reliability standard. The following is the composite reliability value that has been calculated for each variable that was used in this study:

Table 4 Composite Reliability

Variable	*Composite Reliability*
Labor (X1)	0,947
Material (X2)	0,868
Equipment (X3)	0,902
Construction Method (X4)	0,876
Relationship (X5)	0,932
Time & Control Aspect (X6)	0,927
Delayed Project (Y)	0,928

Source: Processed Data

According to the information shown in Table 4, the composite reliability value of all research variables is > 0.70. Consequently, each variable has achieved composite reliability, so that all variables are competent for measuring latent variables/constructs and can be employed in subsequent analyses.

4.1.4. Cronbach Alpha

If a variable's Cronbach alpha value is > 0,6, then the variable can be considered reliable and meet the Cronbach alpha standard. The following table presents the respective Cronbach alpha values for each variable:

Table 5 Cronbach Alpha

Variable	Cronbach Alpha
Labor (X1)	0,915
Material (X2)	0,827
Equipment (X3)	0,838
Construction Method (X4)	0,807
Relationship (X5)	0,908
Time & Control Aspect (X6)	0,909
Delayed Project (Y)	0,901

Source: Processed Data

As can be seen from the results of the tests presented in the table located above, the Cronbach alpha value of each of the research variables is > 0.60. The requirements of the Cronbach alpha value have therefore been satisfied by each research variable.

4.1.5. Inner Model Test

In this research, a Partial Least Square (PLS) analysis was carried out with the assistance of the SmartPLS software in order to verify the research hypothesis. This is an illustration of the PLS model that has been suggested.

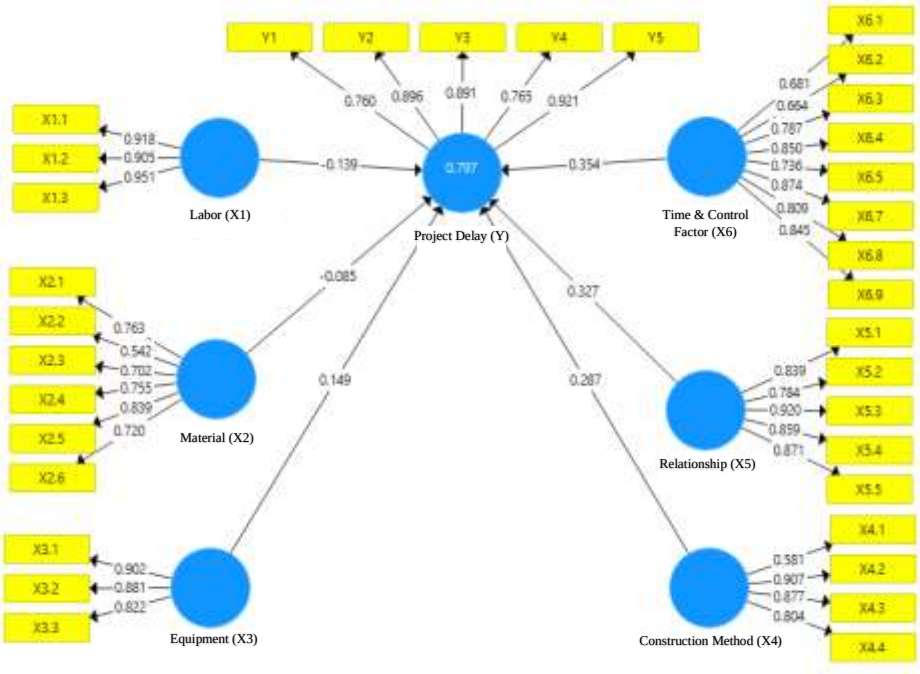

Figure 3 PLS Model

The results of the inner weight value in Figure 3 indicate that the Project Delay variable is composed of Labor, Materials, Equipment, Construction Methods, Relationships, Time, and Control Factors, as outlined in the following structural equation.

$$Y = -0{,}139\ X_1 - 0{,}085\ X_2 + 0{,}149\ X_3 + 0{,}287\ X_4 + 0{,}327\ X_5 + 0{,}354\ X_6$$

4.1.6. Hypothesis Test

The t-statistics required to refute the research hypothesis are shown in Table 6 below.

Table 6 Hypothesis Test Result

	Original Sample	T Statistics
Labor (X1) -> Project Delay (Y)	-0,139	1,015
Material (X2) -> Project Delay (Y)	-0,085	1,271
Equipment (X3) -> Project Delay (Y)	0,149	1,043
Construction Method (X4) -> Project Delay (Y)	0,287	3,386
Relationship (X5) -> Project Delay (Y)	0,327	2,176
Time & Control Factor (X6) -> Project Delay (Y)	0,354	2,685

Source: Processed Data

Based on the results of hypothesis testing shown in the table above shows that:

a. Labor (X1) has no significant effect, but has a negative relationship to Project Delay, because it has a T statistic value of 1,015 which is less than 1,96.
b. Material (X2) has no significant effect, but has a negative relationship to Project Delay, because it has a T statistic value of 1,271 which is less than 1,96.
c. Equipment (X3) has no significant effect, but has a positive relationship to Project Delay, because it has a T statistic value of 1,043 which is less than 1,96.
d. The Construction Method (X4) has a significant positive effect on Project Delay, because it has a T statistic value of 3,386 which is greater than 1,96.
e. The relationship (X5) has a significant positive effect on Project Delay, because it has a T statistic value of 2,176 which is greater than 1,96.
f. Time & Control Factor (X6) has a significant positive effect on Project Delay, because it has a T statistic value of 2,685 which is greater than 1,96.

4.1.7. Structural Model Testing (Inner Model)

In order to evaluate the model using PLS, the R-square statistic for each dependent latent variable is examined first. Changes in the value of R-square can be used to determine whether certain independent latent variables have a substantial impact on the dependent latent variable. For endogenous latent variables in structural models, R^2 values of 0,75 represent "strong" models, R^2 values of 0,50 represent "moderate" models, and R^2 values of 0,25 represent "weak" models (Ghozali, 2016). The PLS output consists of the following:

Table 7 R-Square Value

	R Square
Project Delay (Y)	**0,797**

Source: Processed Data

According to the findings of the preceding R-square value test, the following can be deduced: the Labor, Material, Equipment, Construction Methods, Relationships, and Time & Control Factors variables that make up the Project Delay variable in the structural model have an R^2 value of 0,797, which indicates that the model is "strong" and can form a Consultant Performance of 79,7%.

4.2. Discussion

4.2.1. The Effect of Labor on Project Delay

According to the findings of the study, the workforce had no significant effect on project delays. This is evident from the fact that the t-statistic value of 1.015 is less than 1.96, indicating that the Manpower factor cannot affect Project Delay. Based on the direction of the relationship, Labor and Project Delay has a negative relationship with a value of -0.139. This study's findings contradict those of Aji & Yudha (2021) research, which demonstrates that labor has an effect on project delay.

4.2.2. The Effect of Material on Project Delay

The findings of the study indicate that the material has no significant impact on project delays. This is evident from the fact that the t-statistic value of 1.271 is less than 1.96, indicating that Material cannot be a factor affecting project delay. Based on the direction of

the relationship, Material and Project Delay has a negative relationship with a value of -0.085. The findings of this study is disagree with the findings of a study that was carried out by Ariyanto et al., (2019) which demonstrated that Material plays a role in Project Delay.

4.2.3. The Effect of Equipment on Project Delay

According to the findings of the study, there was no correlation between equipment and project delays. This is evident from the fact that the t-statistic value of 1.043 is less than 1.96, indicating that the Equipment factor cannot be a factor that influences Project Delay. Based on the direction of the relationship, Equipment and Project Delay has a positive relationship with a value of 0.149. This study's findings contradict those of Aji & Yudha (2021) which demonstrates that equipment has an impact on project delay.

4.2.4. The Effect of Construction Method on Project Delay

According to the findings of the study, the construction method significantly affected project delays. This is evident from the t-statistic value of 3.386, which is greater than 1.96, indicating that the Construction Method factor may influence Project Delay. Based on the direction of the relationship, Construction Method and Project Delay has a positive relationship with a value of 0.287. These results support the research of Aji & Yudha (2021) which states that the Construction Method has a significant effect on Project Delay.

4.2.5. The Effect of Relationship on Project Delay

The results showed that the relationship had a significant effect on the performance of the supervisory consultant. This can be seen from the t-statistic value of 2.176 which is greater than 1.96 which means the relationship can be a factor that affects Project Delay. Based on the direction of the relationship, Relationship and Project Delay has a positive relationship with a value of 0.327. These results support the findings of Ismawanto (2019) which states that Relationships can have a significant effect on Project Delay.

4.2.6. The Effect of Time & Control on Project Delay

The results showed that the time & control factor had a significant effect on project delays. This can be seen from the t-statistic value of 2.685 which is greater than 1.96 which means that the Time & Control Factor can be a factor that affects Project Delay. Based on the direction of the relationship, the Time & Control Factor and Project Delay have a positive relationship with a value of 0.354. The results of this study support the findings of Assaf (1995); Christianto (2015) which states that the Time & Control Factor can have a significant effect on Project Delay

5. CONCLUSION

This study aims to analyze the factors causing delays in road rehabilitation and maintenance in Kejayan Purwosari (Link 197) construction projects due to the Covid-19 pandemic. Based on the findings above, it can be concluded that Labor has a significant negative effect on Project Delay, and Material has a significant negative effect on Project Delay. Meanwhile, Equipment has a significant, positive effect on Project Delay. Construction method also has a significant positive effect on Project Delay. Besides, the relationship has a significant positive effect on Project Delay. As for Time & Control factors have a significant positive effect on Project Delay.

REFERENCES

Aji, M. B., & Yudha, A. (2021). Analisis Faktor-Faktor Penyebab Keterlambatan dan Corrective Action Yang Dilakukan pada proyek pembangunan Apartemen Tamansari Cendekia Semarang Di Masa Pandemi Covid-19. *Universitas Diponegoro*.

Ariyanto, A. S., Kamila, K. A. P., Supriyadi, Utomo, M. B., & Wildana Latif Mahmudi. (2019). Pengaruh Keterlambatan Material Terhadap. *Bangun Rekaprima*, *05*(2), 51–58.

Boy, W., Erlindo, R., & Fitrah, R. A. (2021). Faktor-Faktor Penyebab Keterlambatan Proyek Konstruksi Gedung Kuliah Pada Masa Pandemi Covid 19. *Jurnal Rivet*, *1*(01), 57–64. https://doi.org/10.47233/rivet.v1i01.231

Brahmantariguna, I. A. A. (2015). Hubungan Kompetensi Project Manager Terhadap Keberhasilan Proyek Konstruksi Gedung. *Universitas Udayana*.

Christianto, G. C. (2015). Keberhasilan Proyek Ditinjau Dari Aspek Waktu (Studi Kasus Pada Proyek Pembangunan Gedung). *Universitas Atma Jaya Yogyakarta*.

Dimyati, H., & Nurjamanuddin, K. (2014). *Manajemen Proyek*. CV Pustaka Setia.

Ervianto, W. I. (2005). *Manajemen Proyek Konstruksi*. Penerbit Andi.

Ghozali, I. (2016). Aplikasi Analisis multivariete dengan program IBM SPSS 23 (Edisi 8). *Cetakan Ke VIII. Semarang: Badan Penerbit Universitas Diponegoro*, *96*.

Hendriko. (2016). Analisis Faktor – Faktor Dalam ISO 9001:2008 Yang Berpengaruh Terhadap Kinerja Karyawan Pada Kontraktor Proyek Apartemen High Rise Di Jakarta. *Universitas Tarumanagara*.

Ismawanto, I. (2019). Analisis Faktor – Faktor Penyebab Keterlambatan Penyelesaian Pekerjaan Pelebaran/Peningkatan Jalan (Studi Kasus Jalan Kertosono – Kediri – Tulungagung). *Universitas 17 Agustus 1945 Surabaya*.

Rossela, A., & Mahfuz, H. (2021). Analisis Faktor Penyebab Kendala Pada Proyek Peningkatan Jalan (Studi Kasus : Jalan Simpang Marina -Simpang Base Camp Kota Batam). *ConCEPTt (Conference on Community Engagement Project)*, *1*(1), 67–70.

Widyarsana, I. P. (2015). Karakteristik Manajer Proyek Terhadap Kualitas Kinerja Pelaksanaan Konstruksi Gedung di Kabupaten Badung. *Universitas Udayana*.