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Factors Causing Delays in Road Construction Projects in Kerinci Regency

Hengki Junata[1], Dwifitra Y Jumas[2], Eva Rita[3]
[1] Magister Teknik Sipil, Universitas Bung Hatta, Indonesia
[2,3] Dosen Pascasarjana, Universitas Bung Hatta, Indonesia
hengkijunata01@gmail.com

Abstract

Delays in road construction projects are one of the problems that often occur in the implementation of infrastructure development, especially in Kerinci Regency. This study aims to identify and analyze the factors causing delays in road construction projects in the region. The research method used is quantitative descriptive with a survey approach. The study population consisted of contractors, project supervisors, and related parties involved in the implementation of road projects, with samples taken purposively. The data collection instrument is in the form of a questionnaire that is compiled based on indicators of project delay factors, such as project management, human resources, equipment, weather conditions, and funding. The data obtained was analyzed using descriptive statistics to determine the frequency, percentage, and ranking of factors that contributed to project delays. The results show that project management and planning factors are the main causes of delays, followed by limited human resources and equipment, as well as unfavorable weather conditions. These findings provide a comprehensive overview of the obstacles faced in road construction projects in Kerinci Regency and can be used as a reference for related parties to design mitigation strategies to increase the effectiveness and timeliness of project implementation.

Keywords: Project Delays, Road Construction, Quantitative Descriptive, Causative Factors, Kerinci Regency.

1. Introduction

Road infrastructure development plays a strategic role in improving connectivity between regions, which in turn encourages regional economic growth. Good road infrastructure can accelerate the mobility of goods and services, reduce logistics costs, and improve the efficiency of product distribution(Tsania et al., 2025). This is very important for Kerinci Regency which has abundant natural resource and tourism potential, but still faces the challenge of limited accessibility. With adequate road infrastructure, it is hoped that it can open up regional isolation, increase local competitiveness, and attract investment which will ultimately improve the regional economy. In addition, the development of road infrastructure also contributes to equitable development and improves the quality of life of the community. Better access to economic centers, health services, education, and other public facilities can improve people's well-being(Asnur et al., 2024; Dewanto et al., 2024; Utomo et al., 2023). In Kerinci Regency, the construction of roads that connect remote areas with economic centers can open up opportunities for small and medium enterprises (SMEs) to develop, expand the market, and create new jobs. Thus, the development of road infrastructure not only encourages economic growth, but also plays a role in reducing social and economic disparities between regions (Hall, 2020); (Sugiarto et al., 2024).

Delays in road construction projects are a problem that often arises in the construction industry, both at the national and regional levels(Putranindya et al., 2025). This phenomenon not only causes cost and time overruns, but also impacts the quality of work and stakeholder satisfaction. According to Aibinu and Jagboro (2002), construction project delays can occur due to a combination of internal and external factors, including immature planning, ineffective project management, human resource constraints, and unfavorable weather conditions(Rustiadi et al., 2023). In Kerinci Regency, geographical challenges in the form of mountainous areas and limited access further increase the risk of delays in road projects, thus requiring more attention in project planning and implementation (Halim, 2018); (Andriani et al., 2025); (Rafki et al., 2024).

This phenomenon of delays is also an important indicator in assessing the efficiency of construction project management. A study by Sambasivan and Soon (2007) shows that more than 70% of construction projects in various countries experience delays, which are mostly due to internal management factors, material unpreparedness, and permitting. In the context of Kerinci Regency, delays in road projects not only cause economic losses, but also hinder the distribution of goods and services, disrupt community mobility, and affect local economic growth(Triantho & Santosa, 2023; Hakim & Zulkifli, 2021; Zulyusri et al., 2023). Therefore, an in-

depth understanding of the factors that cause delays is essential to formulate effective mitigation strategies.Delays in road construction projects have a significant impact on the cost aspect. Delays in project implementation often lead to unexpected cost overruns, as contractors have to bear additional costs for labor, equipment rentals, and materials that may experience price inflation. According to Othman et al. (2017), project delays can increase the total cost by up to 20–30% of the initial budget, depending on the duration of the delay and the complexity of the project. In Kerinci Regency, limited accessibility and typical geographical challenges exacerbate the potential for cost overruns, so good budget management is crucial to maintain project sustainability (Ikhsan & Hidayat, 2024).

In addition to the financial impact, project delays also affect the quality of construction and public services. Projects that are forced to catch up on time after experiencing delays often come at the expense of quality standards, thus posing a risk of premature damage to the road and requiring additional repairs. Furthermore, disruptions to public services have become real, as people's access to economic, educational, and health facilities has become limited. According to Assaf and Al-Hejji (2006), delays in infrastructure projects not only hinder physical development, but also cause socio-economic impacts on the communities that depend on the road. Therefore, mitigating delays is an important step to maintain cost efficiency, quality, and smooth public services (Setiani et al., 2023).

Identifying the factors that cause construction project delays is a crucial step in effective project management. By knowing the root causes of delays, project managers can plan the right mitigation strategies, from rescheduling, allocating resources, to quality control of work. According to Enshassi et al. (2009), factors such as immature planning, labor limitations, delays in material procurement, and weather conditions are common causes of project delays, and proactively addressing these factors can reduce the risk of cost overruns and deteriorating work quality. In Kerinci Regency, the identification of these factors is critical given the challenging geographical conditions and the infrastructure that is still developing (Kalsum et al., 2019; Santosa et al., 2020; Uluk et al., 2024).

In addition, understanding the factors causing delays also provides a basis for evaluating project performance and building project management capacity in the future(Sabar et al., 2023). With an analysis of the most dominant factors, stakeholders can develop risk management guidelines, improve project planning, and improve coordination between stakeholders. According to Sambasivan and Soon (2007), construction projects that successfully identify and manage the delay factors tend to be completed on time and within budget, while increasing stakeholder satisfaction. Therefore, research on the factors causing delays in road construction projects in Kerinci Regency can make an important contribution to more effective and sustainable project planning.

Although the problem of delays in road construction projects is widely discussed in international and national literature, empirical studies that specifically examine the causes of delays in Kerinci Regency are still very limited. Most of the existing research is qualitative or national, so it does not provide a detailed picture of the local factors that influence construction projects in this area. According to Assaf and Al-Hejji (2006), geographical conditions, local resources, and management practices in each region can produce different causes of delays, so a quantitative approach based on local data is needed to obtain a more accurate understanding (Nuraeni et al., 2025).

The limitations of this empirical research raise the need to conduct quantitative studies that can objectively measure the factors causing delays in road construction projects in Kerinci Regency. Quantitative data-driven research allows for the ranking analysis of the dominance of causative factors, correlations between variables, as well as the identification of the most effective mitigation priorities. Thus, this study not only fills the literature gap, but also provides a solid basis for decision-making in local project management, improving time and cost efficiency, and supporting the sustainability of infrastructure development in the region (Enshassi et al., 2009; Sambasivan & Soon, 2007). Based on this, this study aims to find out the Factors Causing Delays in Road Construction Projects in Kerinci Regency.

2. Research Methods

This study uses a quantitative descriptive method to analyze the factors causing delays in road construction projects in Kerinci Regency. The quantitative descriptive approach was chosen because it allows researchers to measure, classify, and systematically present data in the form of numbers or percentages, thus facilitating the identification of dominant factors influencing project delays. According to Creswell (2014), quantitative descriptive research is suitable for use when the main goal is to objectively describe existing phenomena and provide a basis for management decision-making based on empirical data.

The study population consisted of contractors, project supervisors, and related parties involved in the implementation of road projects in Kerinci Regency, with samples taken purposively to ensure respondents had relevant experience and information. Data is collected through questionnaires that measure various indicators of

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delays, such as project management, human resources, equipment, weather conditions, and funding. Next, the data was analyzed using descriptive statistics, including frequency, percentage, and ranking, to determine the most dominant factors. With this method, the research can provide a comprehensive overview of the obstacles faced in road construction projects and provide strategic recommendations for related parties (Sugiyono, 2017).

3. Results and Discussions

TheThis research was carried out on the Kerinci Regency road construction project that has been built from 2019 to 2021. The respondents in this study are people who are directly involved with the project, namely service users, contractors, planning consultants and supervisory consultants. The distribution of the questionnaire was carried out directly to several respondents related to the jaalan construction project in Kerinci district with the purpose and objectives of this study first explained. The researcher conducted interviews with respondents to reinforce the answers and reasons presented. The results of filling out the questionnaire were taken no later than 3 weeks after the questionnaire was given and from a number of questionnaires distributed, a total of 50 pieces could be collected.

The data processing of the results of this study was taken as a whole from all incoming data, namely 50 respondents. Before taking the overall data analysis, first look at data based on work items that affect the delay in completing the project implementation which includes several factors, namely labors, materials, equipment, site characteristics, finances, environment, changes, scope and contracts/work documents (contract documents), planning and scheduling, systems inspection, control and evaluation of work and managerial so that it will be seen that the main factors affecting the delay in the completion of the Road Construction project in Kerinci Regency will be seen. The results obtained from the questionnaire withdrawal were divided into several subjects, namely respondent profiles, project profiles, respondent perceptions, and validity and reliability tests dapat dilihat pada Tabel 1 dan 2.

Table 1. Validity Test

Factor	Variable	Corrected Item-Total Correlation	r Tabel	Information
X1	X1.1	0,655	0,273	Valid
	X1.2	0,806	0,273	Valid
	X1.3	0,420	0,273	Valid
	X1.4	0,293	0,273	Valid
	X1.5	0,744	0,273	Valid
	X1.6	0,701	0,273	Valid
	X1.7	0,583	0,273	Valid
	X1.8	0,519	0,273	Valid
	X1.9	0,793	0,273	Valid
	X1.10	0,895	0,273	Valid
X2	X2.1	0,894	0,273	Valid
	X2.2	0,668	0,273	Valid
	X2.3	0,632	0,273	Valid
	X2.4	0,628	0,273	Valid
	X2.5	0,838	0,273	Valid
	X2.6	0,699	0,273	Valid
	X2.7	0,697	0,273	Valid

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	X2.8	0,686	0,273	Valid
	X2.9	0,833	0,273	Valid
	X2.10	0,833	0,273	Valid
	X2.11	0,885	0,273	Valid
	X2.12	0,895	0,273	Valid
	X2.13	0,931	0,273	Valid
	X2.14	0,827	0,273	Valid
X3	X3.1	0,763	0,273	Valid
	X3.2	0,785	0,273	Valid
	X3.3	0,873	0,273	Valid
	X3.4	0,890	0,273	Valid
	X3.5	0,850	0,273	Valid
	X3.6	0,732	0,273	Valid
	X3.7	0,792	0,273	Valid
	X3.8	0,893	0,273	Valid
	X3.9	0,770	0,273	Valid
X4	X4.1	0,686	0,273	Valid
	X4.2	0,869	0,273	Valid
	X4.3	0,771	0,273	Valid
	X4.4	0,734	0,273	Valid
	X4.5	0,880	0,273	Valid
	X4.6	0,825	0,273	Valid
	X4.7	0,754	0,273	Valid
	X4.8	0,885	0,273	Valid
	X4.9	0,803	0,273	Valid
	X4.10	0,757	0,273	Valid
X5	X5.1	0,839	0,273	Valid
	X5.2	0,917	0,273	Valid
	X5.3	0,871	0,273	Valid
	X5.4	0,798	0,273	Valid
	X5.5	0,765	0,273	Valid
	X5.6	0,820	0,273	Valid
	X5.7	0,799	0,273	Valid
	X5.8	0,704	0,273	Valid
	X5.9	0,868	0,273	Valid
X6	X6.1	0,740	0,273	Valid
	X6.2	0,735	0,273	Valid

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	X6.3	0,866	0,273	Valid
	X6.4	0,869	0,273	Valid
	X6.5	0,896	0,273	Valid
	X6.6	0,798	0,273	Valid
	X6.7	0,804	0,273	Valid
	X6.8	0,872	0,273	Valid
	X6.9	0,804	0,273	Valid
X7	X7.1	0,814	0,273	Valid
	X7.2	0,768	0,273	Valid
	X7.3	0,860	0,273	Valid
	X7.4	0,783	0,273	Valid
	X7.5	0,864	0,273	Valid
	X7.6	0,860	0,273	Valid
X8	X8.1	0,899	0,273	Valid
	X8.2	0,846	0,273	Valid
	X8.3	0,847	0,273	Valid
	X8.4	0,883	0,273	Valid
	X8.5	0,880	0,273	Valid
	X8.6	0,852	0,273	Valid
	X8.7	0,797	0,273	Valid
	X8.8	0,868	0,273	Valid
	X8.9	0,811	0,273	Valid
	X8.10	0,818	0,273	Valid
X9	X9.1	0,831	0,273	Valid
	X9.2	0,885	0,273	Valid
	X9.3	0,902	0,273	Valid
	X9.4	0,812	0,273	Valid
	X9.5	0,702	0,273	Valid
	X9.6	0,828	0,273	Valid
	X9.7	0,773	0,273	Valid
	X9.8	0,735	0,273	Valid
	X9.9	0,852	0,273	Valid
	X9.10	0,630	0,273	Valid
X10	X10.1	0,821	0,273	Valid
	X10.2	0,789	0,273	Valid
	X10.3	0,836	0,273	Valid
	X10.4	0,763	0,273	Valid

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	X10.5	0,748	0,273	Valid
	X10.6	0,881	0,273	Valid
	X10.7	0,797	0,273	Valid
X11	X11.1	0,852	0,273	Valid
	X11.2	0,880	0,273	Valid
	X11.3	0,687	0,273	Valid
	X11.4	0,871	0,273	Valid
	X11.5	0,752	0,273	Valid
	X11.6	0,738	0,273	Valid
	X11.7	0,743	0,273	Valid
	X11.8	0,765	0,273	Valid
	X11.9	0,446	0,273	Valid
	X11.10	0,722	0,273	Valid
	X11.11	0,518	0,273	Valid

Table 2. Reliability Test results

Factor	Number of Variables	Cronbach Alpha	Critical Values Cronbach	Information
X1	10	0,641	0,600	Reliabel
X2	14	0,782	0,600	Reliabel
X3	9	0,817	0,600	Reliabel
X4	10	0,796	0,600	Reliabel
X5	9	1,476	0,600	Reliabel
X6	9	0,820	0,600	Reliabel
X7	6	0,825	0,600	Reliabel
X8	10	0,850	0,600	Reliabel
X9	10	0,795	0,600	Reliabel
X10	7	0,805	0,600	Reliabel
X11	11	0,725	0,600	Reliabel

Based on Tables 1 and 2 Based on the table above, it can be stated that all statements of each variable are declared valid because the r-calculated value is greater than the r-table value and reliable because the Cronbach Alpha value is more than 0.6. Furthermore, the factors causing the delay in the Road Construction Project in Kerinci Regency can be seen in Graph 1.

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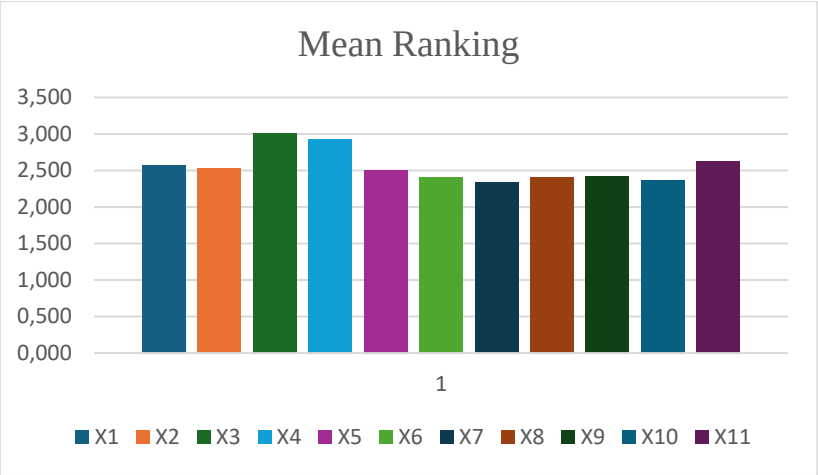

Grafik. 1 Analisis Ranking Faktor

Based on the results of the above data analysis, it is known that the order of factors causing delays in Road Construction Projects in Kerinc Regency is known, namely: Equipment factors, Weather and Location Conditions, Supervision and Quality, Labor, Materials, Planning and Scheduling, Licensing and Land Acquisition as well as Project Management and Coordination and Safety and K3.The delay in road construction projects in Kerinci Regency is influenced by various interrelated factors. Based on the results of quantitative descriptive analysis, project management factors rank as the main cause of delays. This is in line with the findings of Enshassi et al. (2009) who stated that immature planning, ineffective schedule control, and weak coordination between stakeholders are the dominant factors in construction project delays. In Kerinci Regency, the limited experience of the project team in dealing with geographical and logistical challenges also exacerbates the impact of suboptimal project management (Denastyan Agpenta Putra et al., 2025).

Human resource factors are also a significant cause of project delays. Limited skilled labor, attendance, and worker rotation can slow down construction progress. Studies by Sambasivan and Soon (2007) show that lack of competence and experience of the workforce is one of the main causes of project delays in various countries (Werner, 2001). In Kerinci Regency, this is exacerbated by the project locations spread across remote areas so that the recruitment of skilled workers is a challenge in itself. In addition, delays in procurement and availability of construction equipment also affect the project schedule. Othman et al. (2017) emphasized that disruptions in material supply, machine limitations, and inadequate equipment can cause delayed work and disrupt the construction rhythm. In Kerinci Regency, difficult geographical conditions often lead to delays in the delivery of materials and equipment, so the project does not run as planned(Sabar et al., 2023). External factors, such as weather conditions, also play an important role in project delays. High rainfall, flooding, or landslides can hamper fieldwork, force rescheduling, and pose a safety risk to workers. This is in line with the research of Halim (2018) which emphasizes that natural factors are a significant obstacle in the implementation of construction projects in mountainous areas such as Kerinci Regency. Therefore, weather risk mitigation should be an integral part of project planning (Denastyan Agpenta Putra et al., 2025)

Lastly, funding and budget allocation issues also contribute to project delays. Delays in disbursement of funds, unstable financing, and budget revisions can hinder the smooth implementation of work. According to Assaf and Al-Hejji (2006), limited funds are one of the main factors that cause construction projects to experience schedule deviations. In Kerinci Regency, inflexible funding planning often exacerbates the impact of delays on other factors, (Alexsander Yandra et al., 2022)so projects require more adaptive financial management to ensure timely completion.

4. Conclusion

From research and data analysis with spss, the results of analysis and discussion can be drawn, namely, For variables, when viewed from the mean ranking table, all variables are very influential on the delay of construction projects in Kerinci Regency as the top three rankings or rankings, In general, when viewed from the top 5 factors that most affect the cause of delays in Road construction Projects in Kerinci Regency are: Equipment, Weather and Location Conditions, Supervision and Quality (Quantity), Labor (Labors) and Materials (Material) and the

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ranking or ranking of factors causing the delay in road construction projects in Kerinci district as a whole, namely Equipment (Equipment), Site Characteristics (Site Characteristics), Labor (labors), Finance (financing), Situation (environment), Change (change), Scope and Contract/Work Document (contract document), Planning and Scheduling, Inspection System, Work Control and Evaluation, Materials, Managerial

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