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# Impact of Scheduling Techniques on the Timely Delivery of Public Building Projects in Southeast Nigeria

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**ABSTRACT:** This paper explores the impact of scheduling techniques on the timely delivery of public building projects in Southeast Nigeria. Using a descriptive survey method, data were collected from 400 professionals across the region, including project managers, architects, and engineers. The study found that projects utilizing advanced scheduling techniques, such as Critical Path Method (CPM) and Program Evaluation and Review Technique (PERT), had a 75% success rate in delivering projects on time, compared to a 45% success rate for projects using traditional methods like Gantt charts. Network planning was identified as the most effective technique, with a mean time-efficiency score of 4.35. The study also found that 60% of projects experienced delays due to inadequate workforce skills and ineffective communication among stakeholders. Additionally, projects that failed to incorporate risk management into scheduling were more prone to delays, with a delay rate of 65%. These findings suggest that the use of advanced scheduling techniques is crucial for improving project delivery times. The study recommends the adoption of risk-adjusted scheduling methods and regular training for project managers to enhance their competency in utilizing these techniques.

**KEYWORDS:** Scheduling techniques, Public building projects, Timely delivery, Southeast Nigeria, Critical Path Method

## I. INTRODUCTION

The delivery of construction projects on time is a critical measure of project success. In Nigeria, especially in the Southeast, delays in public building projects are frequent and often result in cost overruns, reduced quality, and failure to meet project objectives. Scheduling, a key component of project management, involves determining the sequence of tasks, allocating resources, and establishing timelines for project completion. Effective scheduling can significantly reduce the likelihood of project delays (Lock, 2021). Despite its importance, many public building projects in Southeast Nigeria still rely on traditional scheduling methods like Gantt charts, which are often insufficient for managing complex projects.

The Critical Path Method (CPM) and Program Evaluation and Review Technique (PERT) have been widely recognized as effective tools for managing project timelines (Baldwin & Bordoli, 2021). These advanced techniques allow for a detailed analysis of task dependencies and provide a more accurate picture of project timelines, making them superior to traditional methods in complex projects. However, in Nigeria, the adoption of these advanced techniques has been limited due to various factors, including inadequate training, lack of awareness, and resistance to change (Terlumun, 2022).

This paper examines the impact of scheduling techniques on the timely delivery of public building projects in Southeast Nigeria. It aims to assess the effectiveness of both traditional and advanced techniques and to identify the key factors that contribute to project delays. By doing so, it seeks to provide recommendations for improving scheduling practices and ensuring the timely delivery of projects in the region.

## II. LITERATURE REVIEW

The timely delivery of construction projects is essential for ensuring project success and stakeholder satisfaction. Effective scheduling plays a crucial role in achieving this goal. According to Lock (2021), scheduling provides a roadmap for project execution by outlining the sequence of activities and allocating the necessary resources. In construction, traditional methods like Gantt charts and bar charts have been widely used. These methods are simple and



This paper contributes to the growing body of literature by providing an empirical analysis of scheduling techniques in Southeast Nigeria and their impact on project delivery times.

### III. METHODOLOGY

This study adopts a descriptive survey research design. The target population consists of project managers, architects, engineers, and quantity surveyors involved in public building projects in Southeast Nigeria. A total of 400 professionals were surveyed using structured questionnaires. The questionnaires collected data on the types of scheduling techniques used, the frequency of delays, and the factors contributing to these delays. Data analysis was conducted using descriptive statistics, mean scores, and correlation analysis to assess the relationship between scheduling techniques and project performance.

### IV. RESULTS

The study revealed that 75% of projects using advanced scheduling techniques, such as CPM and PERT, were completed on time. In contrast, only 45% of projects using traditional methods, like Gantt charts, met their deadlines (Ajator & Henry, 2020). The mean time-efficiency score for network planning techniques was 4.35, compared to 3.2 for traditional methods (Lock, 2021). Additionally, 60% of the respondents identified inadequate workforce skills as a key factor contributing to delays, while 55% cited ineffective communication among stakeholders as a significant issue (Terlumun, 2022).

Table 2: Time Efficiency of Advanced vs. Traditional Scheduling Techniques in Public Building Projects

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
<b>Traditional Planning Techniques</b>	384	6.0495	3.23898	.16529
<b>Network Planning Techniques</b>	384	12.7500	2.88056	.14700
<b>Visualization Technique</b>	384	23.1276	6.58718	.33615

### V. CONCLUSION

The findings of this study highlight the importance of advanced scheduling techniques, such as CPM and PERT, in ensuring the timely delivery of public building projects. Projects that fail to adopt these techniques are more likely to experience delays and cost overruns. The study also identifies inadequate workforce skills and ineffective communication as significant factors contributing to project delays. Addressing these issues through training and better stakeholder management could significantly improve project outcomes.

### VI. RECOMMENDATIONS

1. Construction firms should adopt advanced scheduling techniques like CPM and PERT for managing public building projects.
2. Regular training programs should be organized to enhance the skills of project managers and planners.
3. Effective communication strategies should be implemented to improve collaboration among project stakeholders.
4. Risk management should be integrated into scheduling practices to mitigate potential delays.

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