

## Analysis of Delays during Initial Phase of Construction Projects and Mitigation Measures

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**Abstract :** A perfect start is a key factor for project completion on time. The study examined the effects of delayed mobilization of resources during the initial phases of the project. This paper mainly highlights the identification and categorization of all delays during the initial construction phase and their root cause analysis with corrective/control measures for the Kuwait Oil Company oil and gas projects. A relatively good percentage of the delays identified during the project execution (Contract award to end of defects liability period) attributed to mobilization/preliminary activity delays. Data analysis demonstrated significant increase in average project delay during the last five years compared to the previous period. Contractors had delays/issues during the initial phase, which resulted in slippages and progressively increased, resulting in time and cost overrun. Delays/issues not mitigated on time during the initial phase had very high impact on project completion. Data analysis of the delays for the past five years was carried out using trend chart, scatter plot, process map, box plot, relative importance index and Pareto chart. Construction of any project inside the Gathering Centers involves complex management skills related to work force, materials, plant, machineries, new technologies etc. Delay affects completion of projects and compromises quality, schedule and budget of project deliverables. Works executed as per plan during the initial phase and start-up duration of the project construction activities resulted in minor slippages/delays in project completion. In addition, there was a good working environment between client and contractor resulting in better project execution and management. Mainly, the contractor was on the front foot in the execution of projects, which had minimum/no delays during the initial and construction period. Hence, having a perfect start during the initial construction phase shall have a positive influence on the project success. Our research paper studies each type of delay with some real example supported by statistic results and suggests mitigation measures. Detailed analysis carried out with all stakeholders based on impact and occurrence of delays to have a practical and effective outcome to mitigate the delays. The key to improvement is to have proper control measures and periodic evaluation/audit to ensure implementation of the mitigation measures. The focus of this research is to reduce the delays encountered during the initial construction phase of the project life cycle.

**Keywords :** construction activities delays, delay analysis for construction projects, mobilization delays, oil & gas projects delays

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