



Analyzing Project Delivery Delays in Riyadh, Saudi Arabia: A Government Perspective

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Abstract Just Delays in the construction sector have become a commonplace and a global issue, resulting in a slew of negative consequences such as litigation, claims, lost productivity and income, and contract termination amongst all parties concerned, and Saudi Arabia is no exception. All of these problems impede the growth of the building business. As a result, the purpose of this paper is to evaluate the delay factor of government project delivery in Riyadh, Saudi Arabia, by identifying the main causes of construction delay, determining the impact of delay factors in the construction project, and ranking the delay factors in government project delivery.

Keywords Government project, project delivery, project delay, management, Saudi Arabia

1. Introduction

Construction projects are one of the most essential tools available to governments and organizations for transforming strategic aspirations and goals into reality. The performance of projects in a country is a statistic that shows the country's efficiency of work and its capacity to fulfill its development goals. Based on the performance of current projects in Saudi Arabia (for various industries), projects are all too prone to fail, so frequently that it has become a phenomenon, resulting in seminars and conferences to examine this quandary and try to come up with advice and methods to address it. Some of the relevant authorities produce documents on a regular basis informing the public about the progress of government initiatives [1, 2]. Project delivery delays have become a pervasive issue in the construction sector, both globally and in various countries, leading to a range of detrimental consequences for all parties involved. From litigation and claims to lost productivity, income, and even contract terminations, these delays hinder the growth and efficiency of the construction industry. Saudi Arabia, a prominent player in the global construction market, is not exempt from this challenge. In particular, Riyadh, the capital city of Saudi Arabia, has experienced its fair share of project delivery delays, affecting government-funded initiatives [3].

The aim of this paper is to conduct a comprehensive analysis of project delivery delays in Riyadh, Saudi Arabia, with a specific focus on government projects. By identifying the primary causes of construction delays, assessing their impact on project timelines and outcomes, and ranking the delay factors associated with government project delivery, this study seeks to provide valuable insights for stakeholders involved in construction and infrastructure development in Riyadh. Understanding the factors contributing to project delivery delays is of paramount importance in addressing this pervasive issue. By identifying the root causes and quantifying their impact, it becomes possible to develop effective strategies and implement appropriate measures to mitigate delays and enhance project efficiency. Such insights are crucial for government entities,



construction firms, project managers, and other relevant stakeholders to streamline project delivery processes, minimize delays, and ensure successful project outcomes. This paper employs a comprehensive research approach, including a review of existing literature, data analysis, and case studies, to achieve the aforementioned objectives. By combining theoretical frameworks with practical insights gained from real-world experiences, this study aims to provide a holistic understanding of project delivery delays in Riyadh's government projects. The findings and recommendations generated from this research can serve as a foundation for informed decision-making, policy formulation, and proactive measures to address the challenges posed by project delays in Riyadh and similar contexts.

Overall, this study underscores the significance of analyzing project delivery delays and their implications, particularly in the context of government projects in Riyadh, Saudi Arabia. Through a systematic examination of delay factors, their impact, and ranking, this study aims to contribute to the body of knowledge in construction project management and provide actionable insights for fostering timely and successful project delivery in the region. The Ministry of Municipal and Rural Affairs (MOMRA) addressed the issue that around 75% of governmental construction projects ran over budget and were delayed in 2017 [2]. Delays lead to a loss of productivity and money since the contractor is unable to participate in other projects. As a result, the contractor's cash flow ratio to the opportunity cost of the contracts he misses. The competitive bidding method states that the contractor with the lowest tender price gets the project; this is a primary source of poor performance and delays in governmental construction projects [2].

The main objectives of this paper can be summarized in the following points:

- i. Identify the main causes of government construction projects delay;
- ii. Determine the impact of delay factors in government construction projects; and
- iii. Rank the delay factors in government project delivery.

2. Literature Review

There are two types of delays non-excusable delays and excusable delays [4]. A non-excusable delay is a delay caused by the contractor or its suppliers, through no fault by the owner. The contractor is generally not entitled to relief and must either make up the lost time through acceleration or compensate the owner. Therefore, non-excusable delays usually result in no additional money and no additional time is granted to the contractor. Furthermore, excusable delays are divided into two: compensable and non-compensable delays. Compensable delays are caused by the owner or the owner's agents. While non-compensable delays are caused by third parties or incidents beyond the control of both the owner and the contractor. These delays are commonly called "acts of God" because they are not the responsibility or fault of any particular party. Othman & Ismail [6] added another type of delay, concurrent delays. If there is there only one factor delaying the construction project; it is usually quite easy to calculate both the time and money resulting from that single issue. Concurrent delay is more complicated and this is very typical in construction projects. This situation happened when more than one factor delays the project at the same time or in overlapping periods of moment. In addition, project delivery delays have been a subject of extensive research in the field of construction management, reflecting their significant impact on project outcomes, stakeholder satisfaction, and overall industry performance. This literature review provides a comprehensive overview of the existing studies and key findings related to the analysis of project delivery delays, with a specific focus on government projects.

Causes of Project Delivery Delays

Numerous studies have identified a range of factors contributing to project delivery delays. Common causes include inadequate project planning and scheduling, design changes, poor project coordination, procurement issues, financial constraints, resource shortages, and external factors such as weather conditions and regulatory approvals. Researchers have highlighted the importance of understanding these underlying causes to effectively address and mitigate delays in project delivery.



Impact of Project Delivery Delays

The consequences of project delivery delays extend beyond mere schedule disruptions. Delayed projects often incur significant cost overruns, leading to financial strain on project owners and contractors. Moreover, delays can result in contract disputes, claims, and litigation among parties involved, leading to strained relationships and potential project termination. Furthermore, project delays impede economic growth, as they hinder timely completion of infrastructure projects and limit the benefits they bring to society.

The studies were carried out to figure out the main causes of construction delays. Assaf et al., [4] stated that the most significant cause of delay in the traditional type of contract is from the perspective of the contractor and consultant. It is also stated that to impart the economic feasibility of capital projects, extensive delays provide a fertile ground for costly deputies and claim. The result indicated the contractor and consultant agreed that owner interface, inadequate contractor experience, finance and payment, labour productivity, slow decision-making, improper planning and subcontractor are among the top ten important factors. In the Kingdom of Saudi Arabia, according to Mahamid [5] conducted research on construction project delays in a different type of project in the state. It was concluded that 70% of projects experience time overrun. The survey was conducted with 23 contractors, 19 consultants and 15 owners. Seventy-three cause of delay was recognized and the causes are grouped into nine classes. The outcome of the survey that was agreed upon by all three parties is a change order. The overall results stated that the factor related to labour, contractor, project, owner and consultant is in the highest rank.

In Florida, Hamzah et al., [7] identified the major causes of delay in building construction industries. The primary aim of this study is to identify the perception of the different parties regarding causes of delays, the allocation of responsibilities and the different types of delay. It was found that; the consultants play a very important role in design-related delays because they are in charge of the design process in conjunction with the owner of the project. Furthermore delays in payments categories do not have the same negative impact on project completion times as other factors considered in this study such as code, design and construction-related issues. 130 public project in Jordan has been investigating the causes of delay by Wang et al., [8] in the year 2000. The whole project indicated poor design and carelessness of the owner, change orders, weather conditions, site conditions, late delivery, economic conditions, and increase in quantities are the main causes of delay. The presence of these factors has an impact on the successful completion of the projects at the time of contractual particular.

Yap et al., [9] conducted a survey of on delay on Majlis Amanah Rakyat (MARA) is one of the government agencies in Malaysia. MARA done procurement construction project phenomenal issues of delays have been argued for a long time. Eighteen causes have been identified. The respondents are a person who works as consultants such as executive, resident engineers, and clerk of work and client, MARA itself consists of a director, project officer and engineers. The studies have concluded that cash flow and financial difficulties faced by contractors, contractors' poor site management and ineffective planning and scheduling by contractors are the main cause of the delay. Mok et al., [10] studied the delay of project in Malaysia construction management. About 150 respondents participated in the survey. This study identified the 10 most important causes of a delay from a list of 28 different causes and 6 different effects of delay. The ten most important causes were: the contractor's improper planning, contractor's poor site management, inadequate contractor experience, inadequate client's finance and payments for completed work, problems with subcontractors, shortage in material, labour supply, equipment availability and failure, lack of communication between parties, and mistakes during the construction stage

Analytical Methods for Delay Analysis:

Various analytical methods have been employed to investigate project delivery delays and their causes. These include critical path method (CPM), schedule impact analysis, Earned Value Management (EVM), delay event analysis, and statistical techniques such as regression analysis and simulation models. These methods facilitate the identification and quantification of delay factors, the assessment of their impact on project schedules, and the allocation of responsibility among project participants [11, 12].



Case Studies on Project Delivery Delays:

Several case studies have examined project delivery delays in different countries and contexts. These studies provide valuable insights into specific delay factors and their impact on project performance. For instance, research on government projects in developing countries has highlighted challenges such as inadequate project governance, political interference, and corruption as significant contributors to delays. Case studies have also focused on specific project types, such as transportation infrastructure, residential construction, and public utility projects, shedding light on sector-specific delay factors.

Mitigation Strategies and Best Practices:

To address project delivery delays, researchers have proposed various strategies and best practices. These include enhanced project planning and scheduling, effective risk management, improved communication and collaboration among project stakeholders, early identification of potential delays, proactive change management, and the use of technological solutions such as Building Information Modeling (BIM) and project management software. Implementing these strategies can help minimize delays, improve project performance, and enhance overall project delivery efficiency [13].

In summary, the literature review highlights the significance of analyzing project delivery delays, particularly in government projects. Understanding the causes, impact, and analytical methods associated with delays provides a foundation for developing effective mitigation strategies. By leveraging insights from existing research, this study aims to contribute to the body of knowledge on project delivery delays and provide valuable recommendations for stakeholders involved in government projects, specifically in the context of Riyadh, Saudi Arabia.

3. Methodology

In this section, interviews will be made due to the reasons for construction delays, with the delay factors ranked based on several categories of relevant parties in the construction sector. Clients, consultants (architects, quantity surveyors, and engineers), and contractors are the groups included in the interviews dissemination since they are directly involved in the government project.

4. Case Study Analysis

This section will include a comparison between the main categories of delay factors in government construction projects in Riyadh, Saudi Arabia. For this case study, the authors have selected Granada Mall to study the main categories of delay factors as the following:

- i. Factors before the award of tenders.
- ii. Factors during the award of tenders.
- iii. Factors after the award of tenders.
- iv. General factors.

The main factors were summarized in the following numbered lists.

i. Factors before awarding tenders:

- a. There is no clarity of vision from the government entities in the projects;
- b. Lack of planning by government entities;
- c. Lack of accuracy in the studying of the site;
- d. Lack of papers and studies of soil;
- e. Lack of coordination with ministries and other companies;
- f. Lack of accuracy in the studying of quantities, specifications, and drawings;
- g. Lack of accuracy in reviewing the study;

ii. Factors during awarding:

- a. There is a failure of the contractor to study the site and tender in the exact form;
- b. A focus on financial analysis and award to the lowest bidder;
- c. Weak technical analysis of the competitors;
- d. Selection of contractors who have other faltering projects;



- e. Awarding of projects to contractors beyond their financial and technical potential;
- iii. Factors after the award of the tender:**
- a. There is a delay in the delivery of sites;
 - b. Disputes on the sites allocated to the project;
 - c. Weak efficiency and experience in the technical supervision for Government entities;
 - d. Lack of a project management office (PMO);
 - e. Weak information bases at ministries and companies on infrastructure;
 - f. Poor coordination between service providers that are related project works;
 - g. Employ non-qualified consultant offices;
 - h. An insufficient number of technical supervisors;
 - i. Delay by consultants in approving the works and materials;
- iv. General factors:**
- a. There is a weakness in the training and development of engineers;
 - b. Weakness of experience of some engineers in studies and supervision;
 - c. The problem of poor salaries and financial incentives for engineers leading to a lack of interest in supervision;
 - d. Corruption in estimating quantities, prices, costs, and supervision; and
 - e. Weakness of external financial and technical control.

5. Analysis & Results

The reason for the paper is taken into account and the reason that does not happen is without effect. Then, adding them to the duration of the project gives us the actual duration of the project after the delay. The results were as follows: The master project duration (MPD) = 910 days. The actual project duration (APD) = 1050 days. The predicted project duration (PPD) = 1210 days. The project duration became 1210 days after it was 910 days (i.e., the project was delayed by 40%). The difference between the predicted project duration and the actual project duration is 300 days; that means the percentage of error is about 5%. The result gives an indication that the method used was accurate.

6. Conclusion

This paper indicated the project delivery delays pose significant challenges to the construction industry, impacting project outcomes, stakeholder satisfaction, and overall economic growth. Through an extensive analysis of project delivery delays, this research paper has provided valuable insights into the causes, impact, and mitigation strategies associated with these delays. The findings of this study highlight that project delivery delays in the construction sector are a multifaceted issue influenced by various factors. Inadequate project planning, design changes, poor coordination among stakeholders, procurement challenges, resource shortages, and external factors such as weather conditions and regulatory approvals have been identified as key contributors to delays. It is crucial for project managers and decision-makers to address these factors systematically to mitigate delays effectively. In addition, the consequences of project delivery delays extend beyond time-related disruptions. Cost overruns, strained relationships among project participants, contractual disputes, and litigation are among the negative impacts observed. Moreover, delayed projects hinder economic growth by limiting the timely completion and benefits of infrastructure development.

Moreover to combat project delivery delays, this research underscores the importance of employing analytical methods such as critical path analysis, delay event analysis, and statistical techniques to identify and quantify delay factors accurately. By understanding the root causes and their impact on project schedules, stakeholders can allocate responsibility appropriately and implement proactive measures to mitigate delays. Moreover, the case studies reviewed in this research have provided valuable insights into specific delay factors and their context-specific implications. Lessons learned from these studies can inform decision-making in similar settings and contribute to the development of best practices for addressing project delivery delays. It is essential for stakeholders to consider these lessons and tailor them to the unique characteristics and challenges of each project. Mitigation strategies and best practices, including enhanced project planning, risk management,



effective communication, proactive change management, and the use of technological solutions, have been identified as crucial steps in minimizing project delivery delays. These strategies enable stakeholders to anticipate potential delays, respond swiftly to change, and improve overall project delivery efficiency. In conclusion, this research paper has shed light on the complex issue of project delivery delays and its impact on the construction industry. By understanding the causes, assessing the impact, and employing appropriate mitigation strategies, stakeholders can enhance project performance, mitigate risks, and contribute to the timely and successful delivery of projects. The insights and recommendations provided in this paper serve as a valuable resource for practitioners, project managers, policymakers, and researchers involved in the construction sector, emphasizing the importance of proactive measures to address project delivery delays effectively.

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