

The Role of Planning in Reducing Project Delays in Construction Projects

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The Role of Planning in Reducing Project Delays in Construction Projects

CHAPTER 1: INTRODUCTION

1.1 Research Introduction

Construction in the UAE is at the center of the nation's plan for economic diversification, and the market was valued at USD 42.75 billion in 2025, with an anticipated growth to USD 52.66 billion by 2030 (Mordor Intelligence, 2025). Nevertheless, the sector continues to suffer from perennial problems that put the completion of projects in jeopardy, despite its perceptible growth trajectory and lofty ambitions in Dubai, Abu Dhabi, and the Northern Emirates. Among such problems, the postponement of projects has been recognized as a serious issue that affects stakeholder satisfaction, profitability, and the reputation of the building companies. A survey indicates that between 20% and 30% of UAE building projects experience delays, and numerous projects conclude up to 20-40% beyond their deadlines, thereby incurring cost increases of 15-25% (PIQS, 2025). Such a delay not only renders projects more expensive but also inhibits the timely realization of essential infrastructure that the UAE's fast-paced urbanization and its ambitions for sustainable economic growth rely on.

Project planning represents a fundamental management function that establishes the roadmap for successful project delivery from inception to completion. Effective planning encompasses comprehensive activities including scope definition, schedule development, resource allocation, risk assessment, and stakeholder coordination. Research across the international construction sector indicates that project delays are mainly due to poor planning and unrealistic scheduling. In fact, 31.4% of construction professionals stated that a lack of planning is the primary cause of schedule overruns (Burns, 2022). The need for methodical and comprehensive planning is more pronounced in the UAE, where the planning process is substantially more complex due to

overly intricate regulations, frequent design changes, and the rapid pace of market evolution. To improve project outcomes and industry performance, this study examines how the design and implementation of detailed planning techniques can reduce the frequency and severity of construction delays in the United Arab Emirates.

1.2 Research Problem

In the United Arab Emirates (UAE) building sector, construction project delays remain a longstanding issue with profound implications for all parties involved, both financially and operationally. Recent data estimates that 30% of construction projects are delayed, while 50% of any significant project is estimated to run behind schedule (PIQS, 2025). Financially, these implications can be severe, as it is estimated that 70% of building projects experience cost overruns due to delays, thereby affecting profit margins and even project realization. Not only can projects become financially unviable if delays occur, but they also harm relationship building among clients, builders, and consultants, leading to conflict, arbitration, and reputational loss. AlGheth and Ishak (2023) identified early causes of delay for building projects in the UAE, including amendments or change orders, client delay in decision-making and approval, builders not having access to funding, poor site management, inadequate site supervision, and inadequate control of project progress.

This problem is exacerbated in more sophisticated, high-end UAE construction projects, which often involve multiple players, complex designs, high specifications, and concurrent programs that align with national development schedules. Even with the recognized importance of planning in project management, planned and actual project completion dates are widely divergent, with surveys indicating that 77% of builders in the construction industry had experienced delays equivalent to an average of 70 days following preliminary estimates of completion (Kukhnavets,

2021). This research problem aims to understand the specific planning activities and practices that may reduce project delays in UAE construction projects.

1.3 Importance of the Study

This study contributes to the body of knowledge in project management by empirically investigating the relationship between planning quality and delay minimization in construction projects, particularly in the context of the UAE. While the literature considers planning for projects as one of the critical success factors, few empirical studies have systematically analyzed which particular planning dimensions more strongly contribute to delay avoidance. By building and validating an exhaustive conceptual model that relates planning comprehensiveness, resource planning, the use of planning tools, risk management, stakeholder involvement, and monitoring of plans to project delay results, this study advances theoretical insights into the relationship between planning and performance.

From a practical perspective, this study offers actionable recommendations for organizational leaders, project managers, and construction professionals seeking to mitigate delay risks and enhance project delivery performance. Construction organizations will use the findings to identify and focus on planning activities that yield the most significant benefits, including minimizing delays and more efficient use of planning resources and effort allocation. By learning the particular planning tools, techniques, and practices associated with improved schedule performance, consultants and contractors will make their planning more effective, invest in the right technologies, and build organizational capabilities that support competitive differentiation. Lastly, the study provides benchmarks and performance indicators that organizations can use to assess their planning maturity and identify areas for improvement.

At the macroeconomic level, minimizing construction delay makes a critical contribution to the UAE's macroeconomic efficiency and competitiveness. With the construction sector accounting for a significant portion of GDP and serving as an enabler for other sectors of the economy, delays have ripple effects that extend beyond projects to impact tourism infrastructure, business operations, housing availability, and the overall functionality of infrastructure. Minimizing delays through better planning enables the construction sector to avoid the estimated AED 1 billion in lost revenue yearly due to flooding events and infrastructure shortcomings induced by delayed projects (PIQS, 2025). Additionally, minimizing delays enhances public trust in the construction sector and in government development programs, reinforcing the social compact between development authorities and the public.

1.4 Research Questions

1. Is comprehensiveness in building project planning linked to the frequency of delay in UAE building projects?
2. To what extent do various planning practices (resource planning, risk management, stakeholder engagement, and tracking of the plan) influence the extent and duration of delay for construction projects?

1.5 Research objectives

- To investigate the interrelationship of building construction delay occurrence and planning comprehensiveness in UAE projects.
- To see the impact of particular planning methods, such as resource planning, risk and contingency planning, and stakeholder planning, on delay severity and delay duration.

- Identification of key planning factors that have significant impacts on schedule performance and offering recommendations for the enhancement of planning practice in mitigating the delay of UAE building projects.

1.6 Research Hypothesis

- H1: Planning comprehensiveness has an inverse relationship with project delay occurrence
- H2: Resource planning efficiency reduces delay likelihood and frequency
- H3: Contingency and risk planning reduce delay intensity and impacts
- H4: Continued observation and control of plans minimizes delay initiation and facilitates fast recovery

1.7 Conceptual Framework (Research Model)

The research adopts an inclusive conceptual model to investigate the interplay between various planning dimensions and project delays in UAE building projects. Six independent variables that encapsulate the main planning dimensions appear in the model: Planning Comprehensiveness (scope, schedule, cost, and quality planning), Resource Planning (human resources, raw materials, and equipment allocation), Planning Tools and Techniques (traditional and modern planning techniques), Risk and Contingency Planning (risk identification, analysis, and mitigation), Stakeholder Planning (communication and coordination), and Plan Monitoring and Control (progress monitoring and schedule amendments). These independent variables, it is argued, impact the dependent variable, Project Delays, measured in terms of delay occurrence (yes/no), delay days/weeks, delay severity (minor/moderate/major), and on-time completion rate (percentage).

1.8 Scope of the Study

This research is specific in that it focuses solely on building construction projects in the United Arab Emirates, with a particular emphasis on residential, commercial, and institutional projects. The geographical scope encompasses projects in all seven emirates, with a particular interest in the emirates of Dubai, Abu Dhabi, and Sharjah, where the majority of building construction is conducted. The temporal scope encompasses projects completed or substantially completed within the previous three years (2022-2025), aligning with current industry practice and market reality. The research targets practitioners in the building industry, including project managers, building managers, planning engineers, site managers, builders, and consultants who actively participate in project planning and execution.

1.9 Project Structure

Chapter 1: Introduction

- Provides background, problem statement, objectives, and conceptual framework

Chapter 2: Literature Review

- Reviews existing research on project planning and delays
- Establishes theoretical foundation
- Identifies research gaps

Chapter 3: Research Methodology

- Describes research design, population, sampling, data collection, and analysis methods

Chapter 4: Statistical Analysis & Findings

- Presents data analysis results
- Tests hypotheses
- Discusses findings

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter provides an in-depth review of the past literature on construction project delays and the contribution of planning in preventing them. The review examines empirical research, conceptual models, and professional reports to establish a foundation for this research work. The chapter is divided into six key parts, which include the nature of delay in construction, the causes of delay in construction, planning in construction, the link between planning and delay, the conceptual basis, and the research gap that is addressed for the first time in this work.

2.2 Construction Projects Delay: Overview and Impacts

Delays in construction projects are a common phenomenon in the global building sector. Construction project delay occurs when projects fail to achieve planned milestones, extending activities beyond the envisaged schedule (SmartPM, 2025). Categories include critical and non-critical delays, as well as excusable and inexcusable delays (Banerjee, 2023). Recent statistics indicate that 72% of building professionals experienced project delays, 70% scope creep, and 73% budget overruns (Banerjee, 2023). Specifically, in the UAE, more than 30% of projects experience delays of 20-40% beyond deadlines, with cost overruns of 15-25% (PIQS, 2025).

These repercussions extend beyond schedule slips to include monetary, relational, and reputational effects. Cost overruns due to delays affect approximately 70% of projects worldwide, on average, resulting in 70 days of delay beyond completion projections (Kukhnavets, 2021). Cost overruns result from prolonged overhead expenses, price escalations, penalty payments, and lost opportunity costs. Burns (2022) has recorded increases in delay, from 21.55 days in 2021 to 46.8 days in 2022, representing a 117.5% increase. Beyond financial losses, delays put pressure on

stakeholder relations, leading to conflict and lawsuits, as well as damage to reputations that can impact the future competitiveness of contractors and the trust of their clients.

2.3 Construction Delay Causes

Planning-related causes consistently emerge as primary delay factors in empirical research. Burns (2022) found that 31.4% of professionals identified poor planning and unrealistic scheduling as the leading cause, consistent with 2016 findings. This encompasses inadequate scope definition, insufficient detail, unrealistic timelines, and poor resource allocation. Park University (2023) emphasized that inadequate planning manifests as a failure to identify activities, underestimation of durations, insufficient consideration of dependencies, and a lack of contingency provisions. The persistence of planning-related delays suggests systemic deficiencies in organizational planning approaches.

In addition to planning, schedule delays are often due to various stakeholder groups and external influences. Causes due to owners include change orders, delayed decision-making, delayed payments, and site handover delays (AlGheth & Ishak, 2023). Contractor causes include financing challenges, inadequate management, insufficient progress monitoring, and conflicts with subcontractors. Design aspects consist of mistakes, delayed completions, and repeated changes. Second in 2022 was resource availability, with 20% mentioning shortages, an increase from 5% in 2016, due to disruptions from the aftermath of the pandemic (Burns, 2022). External influences, such as weather, regulatory delays, unforeseen site conditions, and economic changes, also contribute to schedule escalation.

2.4 Construction Planning for Projects

Planning for projects creates the foundation for the effective execution of projects throughout all phases of construction. Planning defines targets and selects methods for their

attainment through centralized resource allocation, activity sequencing, and control mechanisms (Trecek, 2024). Its relevance is established in project management literature, and effective planning plays essential roles, such as mitigating uncertainty, aligning stakeholders, maximizing resources, identifying and managing risks, and setting baselines for performance. Evidence from studies indicates that intensive planning in the pre-construction phases is strongly associated with better cost performance, schedule conformance, quality attainment, and stakeholder satisfaction outcomes.

Planning elements comprise several related dimensions that collectively constitute the entirety of project execution. Scope planning sets boundaries, defines deliverables, establishes work breakdown structures, and outlines acceptance criteria. Schedule development captures scope in time-oriented sequences, including durations for activities, links, dependencies, critical paths, and milestones. Resource planning determines the requirements for human resources, materials, equipment, and financial resources. Cost estimation sets budgets at both conceptual and detailed levels, etc. Quality planning sets specifications and inspection regimes, while risk planning entails identifying threats, their probability and impact, and designing mitigating strategies with contingency reserves.

Planning tools have undergone significant transformations with advances in technology. Older methods include Gantt charts for viewing schedules, the Critical Path Method (CPM) for identifying critical activities, and PERT for incorporating variability. New technologies, such as Building Information Modeling (BIM), support 3D visualization, clash detection, quantity takeoff, and multidisciplinary coordination (Torres et al., 2025). Products such as Primavera P6 support resource-loaded scheduling and integrated control. Artificial intelligence and digital twins have the potential to enable predictive analytics, optimization algorithms, and real-time process

simulation (Omrany et al., 2023). The performance of tools, however, is subject to users' level of expertise, data quality, and organizational support for systematic planning.

2.5 Relationship Between Planning and Delays

Empirical studies in various settings present significant evidence supporting a correlation between schedule performance, delay minimization, and planning quality. Projects with extensive planning show predominantly low levels of delay compared to projects with minimalistic planning methods. Park University (2023) reported that managers in 91% of projects in 2022 experienced delays, with 31% attributed to untenable plans and 19% to resource constraints, both of which were linked to these planning shortcomings. Proactive planning, as highlighted in the research, enables teams to identify potential issues in advance, devise preventive solutions, and formulate contingency actions that reduce the consequences of delays. Poor planning was highlighted by Tariq and Gardezi (2023) in their analysis of universal delay drivers, and planning shortcomings were found to have marked associations with delay frequency in all parts of the world.

Critical planning variables for delay that have been identified through case studies and questionnaires include resource planning efficiency, which exhibits strong negative correlations with resource delay (Burns, 2022). Planning for risks and contingencies enables projects to absorb unforeseen forces without interruption, and having written plans for mitigation enables a quick recovery (Washeleski, 2022). Planning for stakeholders enables coordination and quick decision-making. Monitoring plans, voted 34% most effective for mitigation, enable detection of variance at an early date and corrective action at the right time (Burns, 2022). Cumulative evidence suggests that planning is a multi-dimensional approach to prevention, with elements that act on different causality and, collectively, enhance schedule performance.

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Assignment 2: The Role of Planning in Reducing Project Delays in Construction Projects

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The Role of Planning in Reducing Project Delays in Construction Projects

Introduction

Assignment 2 builds on the foundation laid during the first half of the graduation project by expanding on the framework and research design. The aim is to provide an explicit and ordered plan for how the study will investigate the importance of planning in reducing delays in the construction sector. In Assignment 1, the problem, topic, and significance were fully elaborated. This second step extends on that work by drafting the research questions, objectives, hypotheses, model, and strategy. The assignment also provides a detailed analysis of the construction sector and the suggested project format. The goal is to ensure the study is practice-based while maintaining academic requirements. This assignment's outcomes will guide the research process and serve as a foundation for analysis and data collection in the final project.

Research Questions

The research questions touch on the most significant planning elements, from details to communication through implementation, hence being fundamental in comprehending why delays happen in the construction sector.

- 1. To what extent does the level of detail in project planning influence the rate and duration of delay in construction projects?**

This question concerns the planning stage and how detailed documents and schedules can prevent or minimize delays. It investigates whether early preparation can enhance project flow and better forecast challenges.

- 2. What impact does stakeholder coordination in the planning stage have on the chances of design-related delays in construction projects?**

This question acknowledges the importance of coordination and communication among consultants, contractors, architects, and clients. It investigates whether it can prevent mishaps due to conflicting design expectations through greater coordination.

3. What are the main constraints to properly using planning practices in construction project environments?

This question examines the fundamental issues of managers and project teams in real life. It addresses issues like technology gaps, regulatory limitations, or organizational habits that make planning less efficient.

Research Objectives

The research aims are clearly articulated in line with the research questions and are to explore the specific issues that have been recognized.

Objective 1: To explore how the level of detail in planning projects affects the number and duration of delays in construction projects. This objective will explore whether careful, effective planning procedures can reduce delays. It looks into what aspects of planning, such as timelines, resource allocation, and task order, contribute most to successful project delivery.

Objective 2: To study how coordination between stakeholders in the planning process affects the frequency of delays in design. This will assess the importance of early involvement and communication between such key stakeholders as clients, consultants, contractors, and regulators. Therefore, the study will examine how collaboration during planning can prevent misconceptions and costly design changes.

Objective 3: To identify the key impediments that inhibit effective utilization of planning practice in construction projects. This objective seeks to determine the real problems construction teams face in actual practice, for example, technological constraints, organizational resistance,

inadequate training, or inadequate tools for planning. In addition, it will help formulate realistic recommendations for avoiding these issues.

Hypotheses for Research

The following hypotheses guide qualitative analysis and help infer conclusions from observations in real case studies. They provide a context for understanding how planning and project performance work within the construction sector.

H1: Highly planned construction projects are less prone to delays than projects with low planning.

This hypothesis will establish that the deeper the planning at the planning stage, the less likely a construction project is to be delayed. Furthermore, it will be tested by comparing case studies for projects with diverse degrees of planning depth.

H2: Coordination of stakeholders at the planning stage, early on, dramatically reduces the rate of design-related delays in construction projects. This hypothesis connects stakeholder interaction and quality with timing to the severity and quantity of delays regarding design factors. The study will consider how collaboration influences the implementation of projects.

H3: Utilization of effective planning practices in construction projects is limited by a mix of technological, organizational, and regulatory barriers. This hypothesis aims to identify the most common obstacles to successful planning practices. Data from historical projects and research will support it and form a basis for offering recommendations on solutions.

Research Model

The research model used in this study will connect planning practices and construction project delays. It uses three independent variables: the level of planning detail, stakeholder coordination, and barriers to implementation. The dependent variable is the occurrence and magnitude of delay in construction projects. This model helps focus the study on the factors

influencing planning failure or success. Moreover, the model offers a foundation for describing delay patterns by charting how these variables correlate. Actual case studies of construction projects will confirm the relationships between these variables and determine whether improved planning leads to more successful project outcomes. Furthermore, the initial correlation to be examined is between comprehensive planning and reduced delays. Well-documented schedules, compact resource planning, and proper sequencing should minimize disruption. Projects that initiate with a detailed project plan tend to identify risks earlier, use resources better, and provide workflow assurance. The study will quantify whether the quality and extent of up-front planning correlate with improved delivery schedules.

The second link is based on stakeholder coordination. According to Ikudayisi et al. (2023), when key stakeholders such as contractors, consultants, and clients communicate and agree on shared goals early on, there is less confusion during execution. Improved communication can prevent common problems such as design errors, slow approvals, or scope changes. The study will examine how early coordination reduces the chances of disruption and rework. In addition, the model also includes factors that can undermine the benefits of planning. These include inadequate technology uptake, lack of experienced planners, and inadequate communication among project teams. No matter how good the plan is, it will not work if the teams have no tools or desire to do it. Identifying these obstacles will allow the study to propose solutions for improving the operationalization of plans in practice.

Description of the Suggested Industry

The global construction sector is a major driver of economic development, infrastructure, and job creation. Construction in developing and developed nations is a key sector influencing economic growth and national development (Tomh, 2022). The construction industry comprises

residential, commercial, and infrastructure projects managed through complex lifecycles. These lifecycles generally have several stakeholders, tight budgets, and ambitious schedules. Despite its role, the construction industry still suffers from perennial issues, one of the most prevalent and costly being delays. Furthermore, project delays escalate costs, affect stakeholder confidence, disrupt public convenience, and lower profitability. In most of the globe, delays result from ineffective planning processes, poor coordination, and insufficient modern management tools (Ikudayisi et al., 2023). Moreover, ineffective project planning is among the most frequent reasons for delays in construction globally. Most companies continue to use antiquated planning tools or fail to allocate adequate time for the planning process. The literature suggests that careful planning, including detailed task sequencing, realistic scheduling, and early involvement of key stakeholders, dramatically increases the chances of on-time project completion (Sanni-Anibire et al., 2022). Proper planning in advance shows bottlenecks ahead of time and allows for better communication among project teams. However, many construction teams fail to include adequate planning in the early stages, especially in multi-contractor or multi-funding source projects.

Compliance processes and regulations also affect project timelines in various countries. Before issuing approvals, construction activity must meet environmental, zoning, and safety regulations (Srivastava et al., 2021). Projects may suffer from unforeseen delays without these statutory conditions integrated into the planning process at the initial stages. Incoherent or conflicting regulations and ineffective approval systems can hinder project initiation and drive-up holding charges. Moreover, planners ought to acquaint themselves with local regulations and integrate them into the initial feasibility studies and timelines to avoid last-minute surprises. Furthermore, ineffective risk management practices can also lead to delays. Planning must include risk identification and mitigation. Without it, projects remain vulnerable to cost overruns, material

scarcity, or unanticipated disruptions. The absence of contingent provisions for bad weather, market changes, or equipment failure can place project managers in a state of panic during execution. Therefore, new planning tools now include risk simulations for project teams to run simulations on different scenarios and be able to foresee responsive actions, but not all do.

Client changes during construction are another widespread cause of delays. Alenazi et al. (2022) state that when clients request design changes midway through a project, it leads to rework, cost overrun, and schedule adjustments. Additionally, disruptions of this kind are especially critical in extensive infrastructure or business projects where approvals and ordering of materials are tightly scheduled. Poor coordination between designers, contractors, and clients can also lead to ambiguity or missing documentation, which further contributes to the complexity of the implementation. On this score, client participation during the planning phase is key to aligning expectations and avoiding costly late-stage changes. In most locations, especially in the emerging economies, labor shortages and mismatched skills also result in delays. Unexpected absences, skilled worker shortages, and language problems reduce productivity and extend project durations. On the other hand, governments and firms must bridge these gaps through better workforce training and preparation. The COVID-19 pandemic also exposed this vulnerability, as most construction projects across the globe faced lockdowns, travel restrictions, and health-related work stoppages (Sami Ur Rehman et al., 2022). All these disruptions call for contingency planning and adaptable resource planning that considers unexpected situations.

Technology is both an enabler and a disruptor for construction planning. Advanced machinery such as Building Information Modeling (BIM), cloud-based scheduling software, and artificial intelligence-based forecasting systems exist but have patchy take-up across the sector. Large firms are most likely to adopt digital solutions. Chen et al. (2022) report that smaller

contractors have traditional methods because of restricted budgets or a lack of training. This technology gap assists in uneven project outcomes. Regona et al. (2022) note that increasing access to digital tools and training is essential in improving the efficiency of industry-wide planning. Another important feature is organizational cooperation. Construction projects typically bring architects, engineers, contractors, subcontractors, and suppliers together. When these stakeholders do not communicate well from the planning phase, miscommunication and duplication of effort are inevitable. Khouja et al. (2021) highlight that successful construction projects occur when collaborative planning structures are used so that multiple stakeholders can bring in their specialist information early on. This way, there is increased alignment, real-world feasibility is guaranteed, and fewer change orders are needed during execution. Mistakes and delays typically result from fragmentation and silo-working.

The industry is shifting towards more holistic planning approaches in response to these challenges. These include lean construction, where waste is minimized through streamlined workflows and the involvement of all parties from early on. Another is concurrent engineering, where design and construction groups are coordinated at the planning stage to ensure buildability (Motaleb, 2021). In addition to digital twin technologies and AI-powered planning programs, these approaches offer new avenues for improving timelines and reducing uncertainty. Sustainability is also currently a central planning consideration in construction. Sustainable construction requires planners to incorporate energy-saving designs, green materials, and low-emission building practices. This complicates planning since new materials and practices typically involve new suppliers, regulations, or design restrictions. However, carefully planned sustainable construction projects deliver long-term returns and conformity to international environmental standards (Naimi & Alobadi, 2023). In summary, the global building construction sector is vital to progress but

continues to be plagued by planning-related setbacks that result in costly delays. The global causes, design changes, loopholes in the regulations, poor coordination, deficiencies of skilled workers, and uneven use of technology highlight the need for stronger and more resilient planning models.

Research Methodology

This study employs a qualitative research method to explore how effective planning can reduce delays in construction projects. This type of research is best suited to a qualitative method because it will uncover in-depth information regarding the experience, perception, and work practice of the stakeholders engaged in the project. It enables one to examine the planning process through different perspectives rather than relying on numbers or statistical findings. The purpose is to understand how decisions, communication, tools, and coordination impact the performance of the project, in particular, delay prevention or causation. At the same time, the primary data collection technique will be case study analysis of secondary data sources. This method is appropriate for discussing documented cases of construction projects where planning quality and delay have been widely debated. Data will be gathered from professional reports, government case documentation, peer-reviewed journals, and industry publications. In addition, the research will contrast several case studies of several types of construction projects, including public infrastructure, commercial buildings, housing development, and thereby provide an overall picture of delay outcomes and planning practices.

Case studies will be selected against specific criteria. First, the project should properly document its planning strategy, timetable, and outcomes. Secondly, there must be identifiable delay causes such as design changes, labor shortages, regulatory concerns, or technology inadequacies. Third, the cases will be chosen to represent various project sizes and locations to offer broad applicability. Fourth, projects that employed old and new planning methods will receive priority

to allow for comparison. Similarly, thematic analysis will be used as the primary method to analyze data. Under this approach, all selected case study documents will be reviewed to delineate dominant themes such as poor coordination, insufficient stakeholder involvement, and reactive instead of proactive planning. These will be grouped and analyzed to identify the most common planning issues and their implications. Patterns will be compared among successful and failing projects to determine which planning elements most effectively prevent delays.

The study will follow secondary research ethics. All data will be gathered from public sources; therefore, no direct human interaction, informed consent, or privacy concerns are necessary. However, all the data collected will be used as is and cited accordingly. The reliability of every case study source will also be guaranteed for credibility and academic integrity purposes. In order to increase the validity of the findings, the research will use several validation techniques. They include triangulation, concerning information from diverse sources to confirm consistency, and reflexivity. Secondly, peer-reviewed sources will be accorded greater importance than general reports to guarantee the data's dependability.

The nature and extent of available documentation somewhat restricts this method. Some crucial planning components of casual communication or on-the-spot adaptation would probably not be recorded in written case studies. Also, contextual nuances will be lost since the research will not conduct interviews or direct observations. The analysis will acknowledge these limitations, and recommendations for future research using mixed methods will be provided. Despite these limitations, case study analysis remains valuable for identifying patterns and generating advice. It allows one to examine all real-world examples without the limitations of fieldwork and is thus in good standing for university work under time or access restrictions. The

variety of case studies will ensure that the findings are relevant across many different construction environments and can be used to advise planning improvement anywhere in the world.

The utilization of secondary data also aligns with ethical research considerations. Since there is no direct contact with subjects, concerns about informed consent, privacy, and confidentiality are minimized. All the data will be from public sources such as peer-reviewed journals, government reports, and industry white papers. This gives assurance that the information used is credible and traceable. The method will deliver depth, applicability, and scholarly strength. The study will make insightful inferences about construction planning by analyzing several representative real cases. The results of this research will guide the development of actionable recommendations that construction firms can implement to improve project performance and reduce delays.

Suggested Project Structure

Introduction: The background and scope of study are introduced in this chapter. It clearly states the research problem, objectives, and questions. The study's rationale and importance in the construction context will also be explained.

Literature Review: Previous studies on planning and delays in construction will be reviewed in this chapter. It will determine key findings, knowledge gaps, and the theoretical approach to the current study.

Research Methodology: The research design and approach used are explained in this chapter. The chapter will cover the qualitative approach, case study data collection, and analytical methods such as thematic coding.

Data Analysis and Findings: The results of the analysis of the case studies will be given. It will be thematically organized and linked back to the research model. Patterns, challenges, and examples of good planning will be discussed.

Discussion: The findings will be described, and the research questions will be referred to in this chapter. The findings will be contrasted with the existing literature to ascertain the similarities and novel insights.

Conclusion and Recommendations: The final chapter will summarize the key findings and their implications. It will provide practical suggestions on improving planning practices in the construction industry. Suggestions for possible future research will also be provided.

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**Assignment 3: Literature Review on the Role of Planning in Reducing Project Delays in
Construction Projects**

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21/10/2025

Assignment 3: Literature Review on the Role of Planning in Reducing Project Delays in Construction Projects

Introduction

This literature review examines past studies on the influence of planning on construction project delays. The review is focused on three main areas that align with the study issues: planning level of detail and its resultant effect on delays, coordination of stakeholders during planning, and challenges that inhibit planning implementation. Most importantly, good planning for construction should factor in the physical nature of construction operations and project conditions, through a systematic review of literature that traditional planning tends to fail because it is based on the assumption of a predictable environment. The sources for literature were drawn from academic databases focusing on construction management journals between 2021 and 2025. The chapter organizes the findings in rational sections that build knowledge from basic principles to specific issues, identifies knowledge gaps, and sets the stage for the research approach.

Theoretical Foundations of Construction Project Management

Construction project management has evolved significantly from traditional approaches to today's integrated systems, addressing industry-specific challenges. Kerzner (2025) demonstrated that construction projects require expert management approaches because they are subject to unique challenges such as weather dependence, location-specific features, and diverse stakeholders who should collaborate. Similarly, Ikudayisi et al. (2023) believed that integrated engineering, architecture, and construction processes yield more effective results than fragmented ones by incorporating different perspectives from the earliest point possible. In addition, Balasubramanian et al. (2021) stated that constructions 4.0 integrate digital and ancient solutions to the intricacy of contemporary projects. Systems thinking is the theoretical foundation, where

every aspect of a project affects others in complex ways and requires interventions that simultaneously address technical, social, and organizational aspects to achieve successful project outcomes.

The theory of construction planning has changed from a sequential and linear approach to an adaptive and flexible one able to overcome a construction project's uncertainty. Dallasega et al. (2021), in a thorough analysis of the literature, maintained that traditional planning approaches do not always work as they are based on anticipated conditions and do not account for the dynamic nature of construction tasks. The modern planning theory concentrates on continuous planning during the project life cycle rather than creating a fixed plan at the beginning. Amer et al. (2021) stated that automated planning systems have made great advancements in reviewing three decades of research. Implementation remains an issue due to complexity and integration issues. Khalil et al. (2023) acknowledged that careful planning is essential to a project's success, with good planning reducing risks of delays by up to 40% if supported by upper management.

Causes and Classifications of Construction Project Delays

Construction delays are globally experienced, affecting projects regardless of size and location, and have extensive economic and social consequences. The study by Sanni-Anibire et al. (2022), subjected to a meta-analytical assessment, indicated that delays in the building sector occur very differently across regions of the world, with developing countries being more prone to delays than developed countries. The economic impact of the same is severe, normally resulting in cost overruns of 20-50% of the original budgets. Further, the study by Sami Ur Rehman et al. (2022) considered the impacts of COVID-19 on building projects in the UAE and how it affected them to some extent. They reiterated that delays lead to chain effects on current and future projects and the industry's performance in general. The universality of the problem implies that delays are caused

by inbuilt shortcomings of planning and management rather than local factors and requires more intelligent planning-performance links.

Research has identified many categories of delay causes, so that prevention must be approached differently, and planning activities must vary. Alenazi et al. (2022) analyzed the Saudi construction projects and concluded that substantial project delays related to client-related factors, such as decisions made by the clients, design encountered, and delays in approvals. Meanwhile, Tomh (2022) examined design modification in UAE construction projects and found that numerous modifications are a feature of poor planning during the design process. Ajmal et al. (2022) also singled out the scope creep as an issue in which the project parameters grow, yet their planning level does not keep pace, resulting in resource clash and schedule imbalance. Further, Motaleb (2021) formulated risk responses within construction projects and identified external issues like weather, changes in regulations, and the unavailability of materials that substantially influence and cause delays. Such a variety of delay types indicates the multi-dimensionality of construction projects and the necessity to use thorough planning methodologies to handle multiple sources of risks and not just one risk source at a time.

The influence of construction delay goes beyond mere schedule overruns and impacts several stakeholders differently through cascading effects. Arantes and Ferreira (2021) created a methodology to reduce delays and stressed that early detection of potential delays enables more effective and less expensive intervention. Economically, delays usually provide for direct costs through prolonged overheads, equipment rental, and possible penalty payments. Naimi and Alobadi (2023) captured that indirect costs are generally greater than direct costs, including loss of business opportunities, reputation loss, and tainted stakeholder relationships. In addition, delays typically result in vicious cycles where rushed work to make up for lost time results in quality

problems and further postponement, hence making prevention at the beginning through proper planning of the greatest importance.

The Planning Role in Achieving Construction Project Success

Successful construction planning involves several interrelated factors with one another in a bid to pre-empt delays and achieve project outcomes methodically. Khalil et al. (2023) concluded that planning contributes significantly to project success, where proper planning reduces the likelihood of delays by up to 40% given high-level management commitment. Similarly, Dallasega et al. (2021) stated that adequate planning would include quality controls, communications, and coordination processes among different disciplines and trades. Secondly, Motaleb (2021) noted that modern planning would have to consider risk analysis and contingency planning to address the prevailing uncertainties of construction plans. Literature always demonstrates that projects with high planning processes have fewer delays and cost overruns than projects with no planning effort, and planning performance is subject to implementation quality and organizational support, not just the comprehensiveness of planning.

The interconnection between planning sophistication and project performance has been a subject of noteworthy study, with evidence indicating intricate relationships based on project phases and quality of implementation. Dallasega et al. (2021) stated that over-refinement in planning sometimes creates rigidity that constrains adapting to altered circumstances, necessitating an optimal balance of thorough preparation and adaptability. Despite the availability of sophisticated planning technology, most projects still employ basic scheduling software due to complexity and training limitations. Furthermore, Cooke and Williams (2025) pointed out that elaborate planning is especially helpful when several contractors and subcontractors need to be coordinated, with clearly defined interfaces and duties to be determined to avoid conflict. The

reality is that though extensive planning has greater initial expenses, it generally pays for itself in less delay, fewer change orders, and quality results if executed correctly and organizationally supported.

Construction encompasses a range of planning tools and technologies, both traditional and innovative digital technologies, although their use differs greatly across organizations. In a recent study by Amer et al. (2021), the group found that although technology has developed so much, most of the projects continue to use the basic scheduling tools because of implementation obstacles. Furthermore, another study by Chen et al. (2022) has identified that the practice level of technology within construction firms is mixed, as the larger companies were more inclined to use sophisticated planning programs. In contrast, smaller contractors still use traditional methods because of cost and complexity issues. Like Gantt charts and the significant path method, the conventional project management tools are common since they are familiar and reasonably easy to apply. Michalski et al. (2022), however, have shown that lean construction concepts together with BIM technology have developed some synergies, which make planning efficient in cases where they are well integrated. According to the research, one tool or technique alone is not an effective way of planning, and various tools and techniques are likely to be used in proper planning.

Risk management has been part of the construction planning when there is an increase in project complexity and uncertainty, which should be addressed proactively by identifying and developing response strategies. Motaleb (2021) investigated the prospects of the development of building projects and confirmed that thorough risk assessment throughout the planning phase of projects can substantially minimize delays and positively impact the performance of the projects. Risk management is the analysis of possible issues, estimation of the probable risks and the intensity of their potential consequences, and elaborating a proper method of response to the

situation according to the conditions of a certain project. According to Arantes and Ferreira (2021), successful risk identification is necessary for risk management. and developing specific mitigation measures and contingency plans in case things go awry. Also, Sami Ur Rehman et al. (2022) identified the different types of risks experienced in construction projects, such as technical risks due to design and building processes, external risks due to changes in weather and regulations, and organizational risks due to the coordination of stakeholders. The study demonstrates that risk management projects have fewer surprises and the capacity to solve issues.

Stakeholder Coordination and Communication in Planning

Construction works involve numerous stakeholders who have different goals, technical expertise, and work approaches, hence, coordination is an issue that can lead to delays if not adequately addressed in planning processes. Khouja et al. (2021) studied project industries' cooperative interorganizational relations and identified that construction projects have more stakeholders than most, such as clients, architects, engineers, contractors, subcontractors, suppliers, and government agencies. Therefore, construction projects have more stakeholders who need to be coordinated. Every one of the stakeholders has some knowledge and needs that must be incorporated into the master project plan, but conflicting interests and communication failures often undermine coordination promptly. Additionally, Ikudayisi et al. (2023) argued that integrated architecture, engineering, and construction practices enhance project results by considering various perspectives in the planning stages. The temporal characteristic of a construction project team is that stakeholders may not have developed working relationships, limiting coordination and necessitating formal communication and liaison.

According to recent studies, the advantages of an inclusive planning strategy are found in engaging key stakeholders in the planning process early to avoid delay and conflict. Ikudayisi et

al. (2023) suggested that integrated architecture, engineering, and construction practices improve project results by ensuring that multiple perspectives are considered in planning to restrict design conflict and during construction. Khouja et al. (2021) found that through collaborative planning, conflicts and issues that are likely to occur can be anticipated and thus allow for proactive rather than reactive action in construction stages. Collaborative planning is challenging to achieve because it entails a change of traditional working habits and can reveal opposing interests between the stakeholders.

The early integration of the construction and design teams in the planning phase effectively mitigates any delay and enhances overall project coordination. Traditional project delivery methods have a way of separating construction and design, often causing coordination problems and delays, as construction would identify flaws in the design that could have been avoided by integrating earlier in the process. Tomh (2022) found that design changes occur mainly because the design and construction teams are not well coordinated in the planning stage, leading to costly changes at the construction stage. Early input by contractors permits the technical expertise to be incorporated into the design process, as well as determining likely issues before costly changes in the design. According to Ikudayisi et al. (2023), integrated practices offer avenues to enhanced performance in the industry through the convergence of various professional views since the start of the project. Efficient design and building integration, however, necessitates alterations to tried ways of procurement and contractual alternatives, in addition to the early appointment of contractors and integration into design decision-making by the customers.

Obstacles to Effective Implementation of Planning

Organizational conditions generally impede effective planning implementation even when appropriate planning tools and techniques exist, thus provoking resistance against systematic

planning methods. The construction industry has traditionally relied on experience-based decision-making and informal co-ordination practices. These factors have generated resistance towards systematic planning methods, which are perceived as a bureaucratic hurdle for them. Moradi and Sormunen (2023) have seen that lean construction implementation is hindered by organizational challenges like resistance to change, managerial resistance, and ineffective training programs. Most construction practitioners view high-level planning as paperwork that wastes time delaying the start of a project rather than as an investment against future problems, particularly within small organizations where informal practices have previously been successful. Khalil et al. (2023) determined that successful planning requires organizational commitment from top management and investment in training and planning skills improvement.

Despite significant technological advancements in construction planning, various obstacles stand in the way of indiscriminate usage and application of modern planning methods in the industry. Chen et al. (2022) argued that construction technology adoption is extremely variant among organizations, with small firms being particularly hindered in using new planning technologies due to cost and complexity issues that render them uncompetitive. Most construction experts are poorly skilled and prepared to leverage the power of advanced planning software, leading to underutilization of available capabilities and disappointment with technology investment. According to Regona et al. (2022), challenges of AI implementation in construction were researched and concluded that most businesses are not ready to invest in new technology without explicit proof of advantages and return on investment. Integration challenges between different software systems are also impediments because most building projects have multiple organizations that use other technologies that may not communicate well. Additionally, Srivastava et al. (2022) note that technological applications should also consider regulatory limitations that

may inhibit the implementation of new methods and technologies, requiring consideration of compliance matters before adoption.

Emerging Trends and Technologies in Construction Planning

Construction is experiencing a significant digital transformation, reshaping planning practices and management, albeit the adoption remains uneven in organizations. Construction 4.0 refers to an enabler platform that integrates digital technologies with traditional construction practices for greater efficiency and reduced delay through better coordination and management of information, according to Balasubramanian et al. (2021). Artificial intelligence (AI) and machine learning technology are beginning to be used for schedule optimization, resource allocation, and delay prediction, opening new possibilities for proactive project management. Regona et al. (2022) concluded that AI deployment in the construction sector is hindered by significant barriers, including data quality issues, inadequate standardization, and resistance to alterations from traditional practices, limiting technology benefits. However, Chen et al. (2022) discovered that successful digital transformation requires not only the adoption of technology but also the reengineering of business processes, learning new skills, and organizational culture shifts that most firms are not in a position to apply effectively across their operations.

Sustainability concerns are increasingly being integrated into planning methods for construction, introducing new degrees of complication to traditional planning practice and offering opportunities and challenges. Environmental protection standards and green building codes affect material specification, construction practices, and scheduling, so planners are responsible for incorporating sustainability considerations over the whole project cycle rather than just at the end of construction. Sustainable construction will use new materials and methods requiring longer planning time and coordination from non-green building accustomed stakeholders, introducing

possible new delaying causes. Sustainability systems assist project coordination by bringing more systematic resource management and planning practices, Balasubramanian et al. (2021) noted. Therefore, Sustainable planning can reduce some of the causes of conventional delay by encouraging more reflective material specification and quality control that minimizes rework and waste.

Literature Synthesis and Gap Analysis

The literature presents some consensus findings on the relationship between planning and delay in construction projects across different settings. Khalil et al. (2023) determined that delay risks can be reduced by effective planning by up to 40% if supported by management, while Garcés and Peña (2023) demonstrated that lean construction approaches aimed at planning significantly improve the projects' performance. Similarly, Michalski et al. (2022) illustrated that combining lean construction concepts and BIM technology creates synergies that enhance planning effectiveness. However, despite substantial research, substantial gaps still limit practical application. There is limited research on the objective quantification of planning detail; therefore, it is difficult to deduce clearly defined relationships between planning depth and project performance. Whilst stakeholder coordination is widely considered crucial, there is limited research into specific coordination mechanisms and their efficacy in different contexts. Moradi and Sormunen (2023) found similar gaps in research into lean construction implementation, where barriers are well documented but practical solutions are less developed. Therefore, future research should focus on implementation strategies in practice rather than theoretical approaches.

Conclusion

This literature review considered earlier studies on the roles of planning in dealing with construction delays in the construction sector. The review verifies that construction delay remains

a pervasive global phenomenon of significant economic and social influence on projects regardless of location, size, or complexity. The literature fully supports the critical importance of careful planning for delay avoidance, but particular approaches and levels of detail should be tailored to the nature of the project and the organization's abilities. Coordination of the stakeholders in planning is one of the success factors, and involvement early on and effective communication prevent many causes of repeated delays. However, some barriers like organizational resistance and technological and external limitations prevent effective implementation despite good planning practices. The review identifies significant research gaps in previous studies, primarily on systematic quality of planning measurement, specific coordination mechanisms, and practical strategies for overcoming implementation barriers. These shortcomings provide sound grounds for further research by qualitative means to explore planning processes in some depth and yield practice-oriented recommendations.

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The Role of Planning in Reducing Project Delays in Construction Projects

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The Role of Planning in Reducing Project Delays in Construction Projects

CHAPTER 1: INTRODUCTION

1.1 Research Introduction

Construction in the UAE is at the center of the nation's plan for economic diversification, and the market was valued at USD 42.75 billion in 2025, with an anticipated growth to USD 52.66 billion by 2030 (Mordor Intelligence, 2025). Nevertheless, the sector continues to suffer from perennial problems that put the completion of projects in jeopardy, despite its perceptible growth trajectory and lofty ambitions in Dubai, Abu Dhabi, and the Northern Emirates. Among such problems, the postponement of projects has been recognized as a serious issue that affects stakeholder satisfaction, profitability, and the reputation of the building companies. A survey indicates that between 20% and 30% of UAE building projects experience delays, and numerous projects conclude up to 20-40% beyond their deadlines, thereby incurring cost increases of 15-25% (PIQS, 2025). Such a delay not only renders projects more expensive but also inhibits the timely realization of essential infrastructure that the UAE's fast-paced urbanization and its ambitions for sustainable economic growth rely on.

Project planning represents a fundamental management function that establishes the roadmap for successful project delivery from inception to completion. Effective planning encompasses comprehensive activities including scope definition, schedule development, resource allocation, risk assessment, and stakeholder coordination. Research across the international construction sector indicates that project delays are mainly due to poor planning and unrealistic scheduling. In fact, 31.4% of construction professionals stated that a lack of planning is the primary cause of schedule overruns (Burns, 2022). The need for methodical and comprehensive planning is more pronounced in the UAE, where the planning process is substantially more complex due to

overly intricate regulations, frequent design changes, and the rapid pace of market evolution. To improve project outcomes and industry performance, this study examines how the design and implementation of detailed planning techniques can reduce the frequency and severity of construction delays in the United Arab Emirates.

1.2 Research Problem

In the United Arab Emirates (UAE) building sector, construction project delays remain a longstanding issue with profound implications for all parties involved, both financially and operationally. Recent data estimates that 30% of construction projects are delayed, while 50% of any significant project is estimated to run behind schedule (PIQS, 2025). Financially, these implications can be severe, as it is estimated that 70% of building projects experience cost overruns due to delays, thereby affecting profit margins and even project realization. Not only can projects become financially unviable if delays occur, but they also harm relationship building among clients, builders, and consultants, leading to conflict, arbitration, and reputational loss. AlGheth and Ishak (2023) identified early causes of delay for building projects in the UAE, including amendments or change orders, client delay in decision-making and approval, builders not having access to funding, poor site management, inadequate site supervision, and inadequate control of project progress.

This problem is exacerbated in more sophisticated, high-end UAE construction projects, which often involve multiple players, complex designs, high specifications, and concurrent programs that align with national development schedules. Even with the recognized importance of planning in project management, planned and actual project completion dates are widely divergent, with surveys indicating that 77% of builders in the construction industry had experienced delays equivalent to an average of 70 days following preliminary estimates of completion (Kukhnavets,

2021). This research problem aims to understand the specific planning activities and practices that may reduce project delays in UAE construction projects.

1.3 Importance of the Study

This study contributes to the body of knowledge in project management by empirically investigating the relationship between planning quality and delay minimization in construction projects, particularly in the context of the UAE. While the literature considers planning for projects as one of the critical success factors, few empirical studies have systematically analyzed which particular planning dimensions more strongly contribute to delay avoidance. By building and validating an exhaustive conceptual model that relates planning comprehensiveness, resource planning, the use of planning tools, risk management, stakeholder involvement, and monitoring of plans to project delay results, this study advances theoretical insights into the relationship between planning and performance.

From a practical perspective, this study offers actionable recommendations for organizational leaders, project managers, and construction professionals seeking to mitigate delay risks and enhance project delivery performance. Construction organizations will use the findings to identify and focus on planning activities that yield the most significant benefits, including minimizing delays and more efficient use of planning resources and effort allocation. By learning the particular planning tools, techniques, and practices associated with improved schedule performance, consultants and contractors will make their planning more effective, invest in the right technologies, and build organizational capabilities that support competitive differentiation. Lastly, the study provides benchmarks and performance indicators that organizations can use to assess their planning maturity and identify areas for improvement.

At the macroeconomic level, minimizing construction delay makes a critical contribution to the UAE's macroeconomic efficiency and competitiveness. With the construction sector accounting for a significant portion of GDP and serving as an enabler for other sectors of the economy, delays have ripple effects that extend beyond projects to impact tourism infrastructure, business operations, housing availability, and the overall functionality of infrastructure. Minimizing delays through better planning enables the construction sector to avoid the estimated AED 1 billion in lost revenue yearly due to flooding events and infrastructure shortcomings induced by delayed projects (PIQS, 2025). Additionally, minimizing delays enhances public trust in the construction sector and in government development programs, reinforcing the social compact between development authorities and the public.

1.4 Research Questions

1. Is comprehensiveness in building project planning linked to the frequency of delay in UAE building projects?
2. To what extent do various planning practices (resource planning, risk management, stakeholder engagement, and tracking of the plan) influence the extent and duration of delay for construction projects?

1.5 Research objectives

- To investigate the interrelationship of building construction delay occurrence and planning comprehensiveness in UAE projects.
- To see the impact of particular planning methods, such as resource planning, risk and contingency planning, and stakeholder planning, on delay severity and delay duration.

- Identification of key planning factors that have significant impacts on schedule performance and offering recommendations for the enhancement of planning practice in mitigating the delay of UAE building projects.

1.6 Research Hypothesis

- H1: Planning comprehensiveness has an inverse relationship with project delay occurrence
- H2: Resource planning efficiency reduces delay likelihood and frequency
- H3: Contingency and risk planning reduce delay intensity and impacts
- H4: Continued observation and control of plans minimizes delay initiation and facilitates fast recovery

1.7 Conceptual Framework (Research Model)

The research adopts an inclusive conceptual model to investigate the interplay between various planning dimensions and project delays in UAE building projects. Six independent variables that encapsulate the main planning dimensions appear in the model: Planning Comprehensiveness (scope, schedule, cost, and quality planning), Resource Planning (human resources, raw materials, and equipment allocation), Planning Tools and Techniques (traditional and modern planning techniques), Risk and Contingency Planning (risk identification, analysis, and mitigation), Stakeholder Planning (communication and coordination), and Plan Monitoring and Control (progress monitoring and schedule amendments). These independent variables, it is argued, impact the dependent variable, Project Delays, measured in terms of delay occurrence (yes/no), delay days/weeks, delay severity (minor/moderate/major), and on-time completion rate (percentage).

1.8 Scope of the Study

This research is specific in that it focuses solely on building construction projects in the United Arab Emirates, with a particular emphasis on residential, commercial, and institutional projects. The geographical scope encompasses projects in all seven emirates, with a particular interest in the emirates of Dubai, Abu Dhabi, and Sharjah, where the majority of building construction is conducted. The temporal scope encompasses projects completed or substantially completed within the previous three years (2022-2025), aligning with current industry practice and market reality. The research targets practitioners in the building industry, including project managers, building managers, planning engineers, site managers, builders, and consultants who actively participate in project planning and execution.

1.9 Project Structure

Chapter 1: Introduction

- Provides background, problem statement, objectives, and conceptual framework

Chapter 2: Literature Review

- Reviews existing research on project planning and delays
- Establishes theoretical foundation
- Identifies research gaps

Chapter 3: Research Methodology

- Describes research design, population, sampling, data collection, and analysis methods

Chapter 4: Statistical Analysis & Findings

- Presents data analysis results
- Tests hypotheses
- Discusses findings

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter provides an in-depth review of the past literature on construction project delays and the contribution of planning in preventing them. The review examines empirical research, conceptual models, and professional reports to establish a foundation for this research work. The chapter is divided into six key parts, which include the nature of delay in construction, the causes of delay in construction, planning in construction, the link between planning and delay, the conceptual basis, and the research gap that is addressed for the first time in this work.

2.2 Construction Projects Delay: Overview and Impacts

Delays in construction projects are a common phenomenon in the global building sector. Construction project delay occurs when projects fail to achieve planned milestones, extending activities beyond the envisaged schedule (SmartPM, 2025). Categories include critical and non-critical delays, as well as excusable and inexcusable delays (Banerjee, 2023). Recent statistics indicate that 72% of building professionals experienced project delays, 70% scope creep, and 73% budget overruns (Banerjee, 2023). Specifically, in the UAE, more than 30% of projects experience delays of 20-40% beyond deadlines, with cost overruns of 15-25% (PIQS, 2025).

These repercussions extend beyond schedule slips to include monetary, relational, and reputational effects. Cost overruns due to delays affect approximately 70% of projects worldwide, on average, resulting in 70 days of delay beyond completion projections (Kukhnavets, 2021). Cost overruns result from prolonged overhead expenses, price escalations, penalty payments, and lost opportunity costs. Burns (2022) has recorded increases in delay, from 21.55 days in 2021 to 46.8 days in 2022, representing a 117.5% increase. Beyond financial losses, delays put pressure on

stakeholder relations, leading to conflict and lawsuits, as well as damage to reputations that can impact the future competitiveness of contractors and the trust of their clients.

2.3 Construction Delay Causes

Planning-related causes consistently emerge as primary delay factors in empirical research. Burns (2022) found that 31.4% of professionals identified poor planning and unrealistic scheduling as the leading cause, consistent with 2016 findings. This encompasses inadequate scope definition, insufficient detail, unrealistic timelines, and poor resource allocation. Park University (2023) emphasized that inadequate planning manifests as a failure to identify activities, underestimation of durations, insufficient consideration of dependencies, and a lack of contingency provisions. The persistence of planning-related delays suggests systemic deficiencies in organizational planning approaches.

In addition to planning, schedule delays are often due to various stakeholder groups and external influences. Causes due to owners include change orders, delayed decision-making, delayed payments, and site handover delays (AlGheth & Ishak, 2023). Contractor causes include financing challenges, inadequate management, insufficient progress monitoring, and conflicts with subcontractors. Design aspects consist of mistakes, delayed completions, and repeated changes. Second in 2022 was resource availability, with 20% mentioning shortages, an increase from 5% in 2016, due to disruptions from the aftermath of the pandemic (Burns, 2022). External influences, such as weather, regulatory delays, unforeseen site conditions, and economic changes, also contribute to schedule escalation.

2.4 Construction Planning for Projects

Planning for projects creates the foundation for the effective execution of projects throughout all phases of construction. Planning defines targets and selects methods for their

attainment through centralized resource allocation, activity sequencing, and control mechanisms (Trecek, 2024). Its relevance is established in project management literature, and effective planning plays essential roles, such as mitigating uncertainty, aligning stakeholders, maximizing resources, identifying and managing risks, and setting baselines for performance. Evidence from studies indicates that intensive planning in the pre-construction phases is strongly associated with better cost performance, schedule conformance, quality attainment, and stakeholder satisfaction outcomes.

Planning elements comprise several related dimensions that collectively constitute the entirety of project execution. Scope planning sets boundaries, defines deliverables, establishes work breakdown structures, and outlines acceptance criteria. Schedule development captures scope in time-oriented sequences, including durations for activities, links, dependencies, critical paths, and milestones. Resource planning determines the requirements for human resources, materials, equipment, and financial resources. Cost estimation sets budgets at both conceptual and detailed levels, etc. Quality planning sets specifications and inspection regimes, while risk planning entails identifying threats, their probability and impact, and designing mitigating strategies with contingency reserves.

Planning tools have undergone significant transformations with advances in technology. Older methods include Gantt charts for viewing schedules, the Critical Path Method (CPM) for identifying critical activities, and PERT for incorporating variability. New technologies, such as Building Information Modeling (BIM), support 3D visualization, clash detection, quantity takeoff, and multidisciplinary coordination (Torres et al., 2025). Products such as Primavera P6 support resource-loaded scheduling and integrated control. Artificial intelligence and digital twins have the potential to enable predictive analytics, optimization algorithms, and real-time process

simulation (Omrany et al., 2023). The performance of tools, however, is subject to users' level of expertise, data quality, and organizational support for systematic planning.

2.5 Relationship Between Planning and Delays

Empirical studies in various settings present significant evidence supporting a correlation between schedule performance, delay minimization, and planning quality. Projects with extensive planning show predominantly low levels of delay compared to projects with minimalistic planning methods. Park University (2023) reported that managers in 91% of projects in 2022 experienced delays, with 31% attributed to untenable plans and 19% to resource constraints, both of which were linked to these planning shortcomings. Proactive planning, as highlighted in the research, enables teams to identify potential issues in advance, devise preventive solutions, and formulate contingency actions that reduce the consequences of delays. Poor planning was highlighted by Tariq and Gardezi (2023) in their analysis of universal delay drivers, and planning shortcomings were found to have marked associations with delay frequency in all parts of the world.

Critical planning variables for delay that have been identified through case studies and questionnaires include resource planning efficiency, which exhibits strong negative correlations with resource delay (Burns, 2022). Planning for risks and contingencies enables projects to absorb unforeseen forces without interruption, and having written plans for mitigation enables a quick recovery (Washeleski, 2022). Planning for stakeholders enables coordination and quick decision-making. Monitoring plans, voted 34% most effective for mitigation, enable detection of variance at an early date and corrective action at the right time (Burns, 2022). Cumulative evidence suggests that planning is a multi-dimensional approach to prevention, with elements that act on different causality and, collectively, enhance schedule performance.

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