

عوامل تأخر انجاز المشاريع الإنشائية في المملكة العربية السعودية

إعداد الطالب/ زكريا شتات

إشراف/

د. الفیصل عبد الحمید

د. فايز جراد

العام الدراسي:

2024

فهرس المحتويات:

Contents

2	فهرس المحتويات:
3	المستخلص: Abstract
7	المقدمة:
8	-مشكلة الدراسة:
9	-أهمية الدراسة:
10	-أهداف الدراسة:
11	-تساؤلات الدراسة:
11	- فروض الدراسة
12	-النظرية العلمية المتبعة لإعداد البحث:
14	-مقدمة:
14	-الدراسات السابقة:
16	-الإطار النظري:
21	-مقدمة:
21	-المنهجية وطرق البحث:
21	-مجتمع البحث:
22	-حدود البحث:
24	-مقدمة:
24	-تحليل البيانات:
30	-النتائج:
32	-التوصيات:
38	-المراجع:
40	-الملخص Abstract

Delays in the construction industry are a global phenomenon, and the construction sector in Saudi Arabia is no exception. The construction industry plays a pivotal role in the economic growth of many countries, and in Saudi Arabia, it is a fundamental driver of national development. The sector not only contributes significantly to the country's GDP but also supports job creation, infrastructure development, and the realization of various mega-projects. Over the past decade, Saudi Arabia has embarked on some of the most ambitious construction projects in the world, including the Jeddah Tower, which is intended to be the tallest building in the world, and the King Abdullah Financial District (KAFD), designed to be a leading financial hub in the region. These projects are emblematic of Saudi Arabia's Vision 2030, a strategic plan aimed at diversifying the economy and reducing dependence on oil exports by focusing on sectors like tourism, real estate, finance, and entertainment.

However, despite the immense scale and strategic importance of these projects, delays have been a recurring issue. These delays, often resulting in the postponement of completion dates and cost overruns, have raised concerns among stakeholders, including investors, developers, and government authorities. They not only hinder the successful execution of these flagship projects but also have far-reaching consequences on the economy, international investor confidence, and the Kingdom's reputation as a leader in large-scale infrastructure development.

The importance of studying delays in the construction industry becomes evident when considering the significant financial and operational implications. Construction delays can result in increased project costs, disruption in timelines, and a missed opportunity to capitalize on the economic benefits associated with the completion of such developments. Furthermore, delays in high-profile projects such as the Jeddah Tower and KAFD can affect

the global perception of Saudi Arabia's ability to deliver on its ambitious plans, which are critical to its broader economic and geopolitical aspirations.

This research aims to shed light on the underlying causes of delays in the construction industry in Saudi Arabia, with a specific focus on high-profile mega-projects like the Jeddah Tower and KAFC. It explores how gaps between theory and practice contribute to these delays and examines how the construction industry in Saudi Arabia can better align project management practices with successful execution. There is a growing recognition that while construction management theories and frameworks are well established, their practical application often falls short in addressing the complex challenges posed by large-scale projects. These challenges include issues related to project financing, supply chain disruptions, labor shortages, regulatory hurdles, and the coordination of diverse stakeholders involved in the development process.

Additionally, this research will analyze the economic, social, and reputational impacts of construction delays on Saudi Arabia. Mega-projects like the Jeddah Tower and KAFC were expected to generate significant economic benefits, including attracting international investment, boosting tourism, and contributing to job creation. Delays in completing these projects have postponed these expected benefits, delaying Saudi Arabia's progress toward achieving the goals set forth in Vision 2030. The research will also explore the specific challenges faced by the Kingdom in managing such complex projects and provide actionable recommendations for addressing these delays and improving project delivery in the future.

The research will focus on understanding the broader implications of delays, not only in terms of financial costs but also in terms of the social and environmental aspects of the development process. It will explore how delays can affect local communities, disrupt urban development plans, and hinder the delivery of essential infrastructure services. Moreover, the

research will highlight the critical role of effective communication and collaboration among all stakeholders involved in mega-projects, from government entities to contractors and international partners.

In conclusion, the importance of this research lies in its potential to offer valuable insights into the root causes of delays in the construction industry in Saudi Arabia. It is hoped that the findings will contribute to improving project management practices, enhancing the efficiency of construction processes, and ultimately ensuring that the Kingdom's ambitious mega-projects are completed on time and deliver the expected economic, social, and cultural benefits. By addressing the gaps between theory and practice, this research will provide a pathway toward more successful and timely project delivery, helping Saudi Arabia realize its Vision 2030 and secure its position as a global leader in construction and development.

الفصل الأول

This research addresses the persistent issue of construction delays in Saudi Arabia, aiming to identify and assess the root causes of these delays. Delays in construction projects are a universal phenomenon, typically leading to both cost and time overruns. Construction project delays have debilitating effect on all involved parties (owner, contractor, consultant & concerned stakeholders) in a contract. These delays can lead to heightened tensions in relationships, deepen distrust, open the door to litigation or arbitration, cause cash flow issues, and create a general sense of anxiety among the parties involved. Therefore, recognizing the key causes behind these delays is crucial to reducing both the frequency of delays and their associated costs.

This chapter discusses the research problem and its importance the objectives of this study, significance and problems of this thesis, and the research questions. In addition, the objectives and the structure of the thesis are outlined at the end of this chapter.

-مشكلة الدراسة.

Construction projects in Saudi Arabia continue to experience some delays, leading to cost overruns and extended project timelines. These delays affect all stakeholders, including owners, contractors, and consultants, and are often the result of two types of factors as below :

1 .External factors such as : the wars that happen in some countries, corona pandemic that occurred in recent years which negatively impacted on manufacturing and export , and raw material problems in some regions.

2 .Internal factors such as: inadequate project planning, resource shortages, regulatory hurdles, and unpredictable weather conditions .

The repercussions of these delays are severe, including damaged relationships, litigation, financial instability, and disputes. Despite their considerable impact, there is a lack of in-depth studies focusing on the specific causes of delays in the Saudi context. Identifying and understanding these causes is essential for enhancing project efficiency, reducing financial losses, and improving stakeholder collaboration.

According to Al-Ghafly (1995), "The causes of delay in construction projects are numerous, and understanding them is essential to improving project delivery."

-أهمية الدراسة.

The importance of studying delays in construction projects in Saudi Arabia lies in the significant impact that such delays have on the construction industry, the economy, and the stakeholders involved. The key reasons for studying delays in construction projects in Saudi Arabia are as follows:

1. **Economic Impact:** Delays in construction projects lead to increased costs and resource wastage, which can significantly affect the financial stability of both contractors and clients. With the construction sector being a critical part of Saudi Arabia's economy, delays can lead to broader economic consequences, including disruptions in the supply chain and delays in infrastructure development that are vital for the country's growth.
2. **Improving Project Efficiency:** Identifying the root causes of delays allows for the development of more effective strategies to improve project management practices. By understanding why projects are delayed, stakeholders can implement better planning, scheduling, and resource allocation, leading to more efficient and timely project completions.
3. **Enhancing Stakeholder Relationships:** Delays often lead to disputes and strained relationships between project stakeholders (owners, contractors, and consultants) .
4. **Quality Control and Risk Management:** Delays often lead to rushed work, which can compromise quality. Understanding the delay causes can also help improve risk management practices, ensuring that projects are completed on time and to the desired quality standards.
5. **Support for Vision 2030:** Saudi Arabia's Vision 2030 includes major infrastructure development and urbanization projects. Delays can hinder the achievement of these

ambitious goals. By studying and addressing delays, this research supports the timely completion of key projects that align with Vision 2030, contributing to the nation's overall progress.

Studying delays in construction projects in Saudi Arabia is crucial for improving the efficiency, profitability, and overall success of the construction sector, as well as supporting the country's broader economic and developmental objectives.

-أهداف الدراسة.

The main goal of this thesis is to develop a framework that outlines a set of procedures and solutions aimed at preventing or mitigating the issue of delays in construction projects in Saudi Arabia. The objectives of this study include the following:

1. To identify and analyze the primary causes of delays in construction projects in Saudi Arabia.
2. To evaluate the impact of these delays on project outcomes, including cost, time, and quality.
3. To propose a set of strategies and best practices to minimize delays and improve project delivery.
4. To assess the effectiveness of current practices and policies in addressing delays in the Saudi construction sector.
5. To develop a practical framework that can be used by stakeholders (owners, contractors, and consultants) to manage and reduce delays in future construction projects.

-تساؤلات الدراسة

- The first question asks: "Are delays in the completion of construction projects caused by administrative and technical issues?" from the perspective of contractor's companies, and engineering consultant office.
- The second question asks: "Are delays in the completion of construction projects caused by financial issues?" from the perspective of contractor's companies, and engineering consultant office.
- The third question asks: "Are delays in the completion of construction projects due to equipment and materials associated with construction projects?" from the perspective of contractor's companies, and engineering consultant office.
- The fourth question asks: "Are delays in the completion of construction projects due to human resources?"
- The fifth question asks: "Are delays in the completion of construction projects due to contracts?"
- The sixth question asks: "Are delays in the completion of construction projects due to other causes (external reasons)?"

- فروض الدراسة

- First Hypothesis: To investigate the differences between groups based on primary causes of delay and the type of institution.
- Second Hypothesis: To explore the differences between groups concerning the main causes of delay and the financial size of the institution.
- Third Hypothesis: To assess the differences between groups regarding the primary causes of delay and the location of the company within the Saudi.

- Fourth Hypothesis: To examine the differences between groups based on the main causes of delay and the contractor's company.
- Fifth Hypothesis: To analyze the differences between groups regarding the primary causes of delay and the education level of respondents.

-النظرية العلمية المتبعة لإعداد البحث

- Data Collection: Use case studies, historical project timelines, and surveys of project managers and stakeholders in Saudi Arabia to gather empirical data.
- Statistical Analysis: Perform regression analysis or other statistical tests to assess the relationship between each factor and delay duration.
- Model Validation: Compare the findings to similar studies or models from other countries in the region to validate results.

الفصل الثاني
الدراسات السابقة

This chapter provides a comprehensive review of research on the topic of "delays in construction projects." It begins with an introduction to the construction industry in Saudi Arabia, covering aspects such as construction projects, key success factors, the project life cycle, types of delays, the main stakeholders in projects, and a definition of delays in construction projects. Additionally, related studies are reviewed to understand previous findings in this area.

One of the most critical issues affecting the construction industry is that, in many projects, the planned timeline is not met. The extent of delays varies significantly between projects, with some experiencing only minor setbacks and others delayed by over a year. The causes of these delays differ from project to project, making it essential to identify the root causes of delays in Saudi Arabian construction projects to help minimize and prevent them.

Delays in construction projects can have numerous negative consequences, such as strained relationships, mistrust, arbitration, and disputes. The purpose of this study is to mitigate these issues by identifying the primary causes of delays in construction projects in Saudi Arabia and addressing the adverse impacts. This chapter, therefore, aims to review relevant studies focused on the causes of delays in construction projects and to shed light on their role in disputes between owners (or their representatives) and contractors.

-الدراسات السابقة

Construction delays can be classified based on their origin and the level of responsibility held by the contracting parties. Two primary types of delays are frequently discussed:

- **Delays Beyond the Control of Both the Contractor and the Owner:**

These delays are caused by unforeseen events that neither the contractor nor the owner can control. Examples include severe weather conditions, natural disasters, or geopolitical events like wars. Such events are often classified as "force majeure" circumstances, where "the contractor usually does not receive any additional

compensation,” since these factors should be anticipated to some extent in project risk assessments (Rashed, 2008). Contracts typically specify that the contractor cannot claim extra time or costs due to these unavoidable delays.

- **Delays Due to Contractor-Specific Issues:**

This type of delay occurs when challenges within the contractor’s control affect the project timeline. Common causes are “deficiencies in the contractor’s project execution plan, inefficient work methods, or issues with subcontractors and suppliers” (Rashed, 2008). In these cases, the contractor is not eligible for extra time or financial compensation. Instead, the contractor may be subject to penalties or fines for not meeting deadlines.

Agreed Compensation: In many contracts, a predetermined amount, often called “agreed compensation,” is set to cover the contractor’s responsibility for delays. This sum acts as a financial deterrent and may be either more or less than the actual damages incurred by the owner.

Liquidated Damages: This form of compensation, detailed in contracts like those from the International Federation of Consulting Engineers (FIDIC), “is an amount agreed upon in advance to be paid if the contractor fails to complete the project on time.” Typically, liquidated damages are calculated as a daily percentage of the total contract amount, such as 0.01%, and capped at a maximum, often 10% of the contract value (FIDIC, 1999).

The distinction between these types of delays allows contracts to be more precise, outlining specific responsibilities and setting expectations for compensation, ultimately helping to “minimize disputes and clearly define the consequences of delay” (Rashed, 2008).

- The Construction Delay Theory (Kaming et al., 1997)

This theory suggests that delays in construction projects can be categorized into four key areas: external factors, project-specific factors, contractor-related factors, and owner-related factors. The delays in these areas could either be foreseeable or unforeseen, and the interaction between these factors influences the severity of the delays. Project delays result from a combination of external, internal, and stakeholder-related factors, each of which can be mitigated with effective planning and proactive risk management" (Kaming et al., 1997).

- Project Risk Management Theory (Chapman & Ward, 2003)

Chapman and Ward's theory emphasizes the importance of assessing and managing risk in the project lifecycle to reduce delays. It underscores the need for detailed planning, identifying both positive and negative risks early in the project, and creating mitigation strategies. Effective risk management involves thorough identification, analysis, and response planning for potential delays due to factors like budget changes, labor shortages, or material supply issues. "Proactive risk management throughout the project lifecycle enables teams to address potential delays before they escalate into major issues" (Chapman & Ward, 2003).

-الإطار النظري

- Critical Path Method (CPM) and Delay Analysis (Bowers, 1996)

The Critical Path Method (CPM) is a project management tool used to schedule and monitor the progress of construction projects. Bowers discusses how delays on critical tasks can have a cascading effect on the overall project timeline, and suggests that identifying critical paths early on is vital to mitigating delays. Delays on tasks that are part of the critical path will directly impact the project completion date. Properly identifying and managing these tasks can prevent delays and ensure projects stay on track. "Understanding and monitoring the critical path of a project is fundamental to preventing delays and ensuring timely project delivery" (Bowers, 1996).

- The Principal-Agent Theory (Eisenhardt, 1989)

The Principal-Agent Theory explains the relationship between the owner (principal) and contractor (agent). Delays can occur due to differing goals or incentives between the two parties. This theory suggests that misalignment of incentives—where the contractor has no financial interest in timely completion or the owner doesn't effectively monitor the contractor's performance—can lead to delays. "The conflict of interests between owners and contractors, combined with a lack of proper monitoring and incentive alignment, leads to delays and cost overruns in construction projects" (Eisenhardt, 1989).

- The Impact of Cost on Project Delays

Cost is one of the most significant factors influencing project delays. When the project budget is not accurately estimated or managed throughout the lifecycle of the project, it can lead to cost overruns that stall progress. Cost-related delays can be caused by several issues, such as:

Inaccurate Initial Budgeting: If initial cost estimates are overly optimistic or do not account for unforeseen variables such as material price increases, labor shortages, or changes in regulations, the project may face funding shortfalls. These delays in securing additional funds can result in stoppages or slowdowns in construction activities.

Cash Flow Problems: Construction projects often experience cash flow problems during implementation. If funds are not allocated on time or if there are issues with payments to contractors, it can lead to work stoppages, delayed procurement of materials, and delays in meeting deadlines.

Financial Mismanagement: Inefficient financial management can result in delays when funds are misallocated or spent on unnecessary aspects of the project. Project owners and contractors must carefully control costs to ensure that delays do not occur due to budget constraints.

- **The Role of Quality in Project Delays**

The quality of materials and workmanship plays a crucial role in determining the timeline of construction projects. Poor quality can lead to rework, which can significantly extend project timelines. Quality issues arise in several ways:

Substandard Materials: Using inferior materials can compromise the structural integrity of the project, leading to delays as construction teams need to replace materials or rework elements of the building.

Rework Due to Errors: Construction errors, whether from design flaws or miscommunications in execution, often result in rework. This process not only delays the construction timeline but also increases costs.

Lack of Quality Control: Effective quality control mechanisms are necessary to maintain high standards throughout the project. Delays often occur when quality assurance processes are not well-defined or poorly implemented, requiring rectifications later in the process.

- The Contracting Phase and Its Effect on Delays

The contracting phase is one of the initial stages in construction project management, and issues in this phase can lead to significant delays. Poorly managed contracting processes or disagreements in contract terms between stakeholders can impede the progress of the project.

Contract Disputes: Disputes related to contract clauses, payment terms, or scope of work can delay the project. Delays in settling disputes or renegotiating contract terms can lead to work stoppages or the reassignment of tasks, affecting the timeline.

Inadequate Risk Allocation: Contracts that fail to adequately allocate risks between the owner, contractor, and subcontractors can lead to delays. If the contract does not clearly define who bears the responsibility for potential setbacks, delays may occur as parties attempt to resolve issues or negotiate who is responsible for additional costs.

Suboptimal Contractor Selection: Choosing an inexperienced or financially unstable contractor can lead to delays due to inadequate resources or poor project management practices.

- The Design Phase and Its Contribution to Delays

The design phase is critical to the success of a construction project, and any delays during this stage can have a cascading effect on the entire project timeline. Design delays often arise due to:

Changes in Design Requirements: During the design phase, changes in client requirements or regulatory demands can cause significant delays. These modifications often require revisions to the initial plans, which in turn delay procurement and construction activities.

Inadequate Planning and Coordination: Poor coordination between the design team, architects, engineers, and other stakeholders can lead to incomplete or unclear designs, which can result in rework and construction delays.

Approval Processes: Delays in the approval of the design by regulatory authorities can slow down the project. Depending on the complexity of the project, obtaining the necessary permits can take considerable time.

- The Feasibility Study and Its Impact on Delays

A feasibility study is essential for assessing the viability of a project before significant resources are invested. Delays during the feasibility phase can occur when:

Inadequate Feasibility Assessments: A poorly conducted feasibility study can lead to delays during the execution phase when unforeseen issues arise, such as land acquisition problems, environmental challenges, or financial constraints.

Failure to Identify Potential Risks: If the feasibility study fails to account for risks such as market conditions, regulatory changes, or environmental concerns, the project may face delays once construction begins.

Changes in Market Conditions: Fluctuations in the economy or market conditions can affect the project's financial feasibility. For example, rising material costs or labor shortages may not have been anticipated during the feasibility phase, leading to project delays when funding needs to be adjusted.

- **The Impact of Time on Project Delays**

Time management is crucial in the construction industry. Delays often stem from poor time management during any phase of the project, from initial design through to final construction. Factors affecting time delays include:

Scheduling Issues: Poor scheduling practices, such as unrealistic timelines, resource misallocation, or lack of contingency planning, can cause delays in completing tasks within the stipulated period.

External Factors: External factors such as weather conditions, labor strikes, or global supply chain disruptions can also have a significant impact on time, extending the construction duration.

Coordination Failures: Delays often occur due to failures in coordinating tasks between contractors, subcontractors, and suppliers. Proper sequencing and scheduling of tasks are vital for timely project delivery.

الفصل الثالث
منهجية الدراسة

-مقدمة.

This chapter provides the methodology and procedures employed in this research study to identify the methods and approaches used for collecting data and gathering information through field sources. The primary goal of this study is to explore and understand the reasons for delays in construction projects from three key perspectives: those of contractors, consultants, and project owners. By delving into these viewpoints, the study aims to provide a comprehensive understanding of the factors contributing to project delays and propose actionable recommendations for mitigating such issues.

-المنهجية وطرق البحث.

The researcher employed the descriptive analytical approach as the primary method to analyze the data and derive meaningful conclusions from the study. This approach, widely recognized for its effectiveness in studying phenomena, combines systematic description with in-depth analysis to provide a comprehensive understanding of the subject matter. By utilizing this method, the researcher was able to explore the data in detail, uncover patterns, relationships, and key insights, and ultimately address the research objectives effectively.

-مجتمع البحث

The study population consists of individuals and groups directly impacted by the issue of construction project delays. This includes consultant engineering firms, construction contracting companies, and insights drawn from prior researcher experience.

This research focuses on investigating the causes of delays in construction projects within the Kingdom of Saudi Arabia. The boundaries of this study are outlined as follows:

- **Subject Boundaries:**

The study focuses specifically on identifying and analyzing the causes of delays in construction projects in Saudi Arabia. This includes examining factors such as project planning issues, supply chain disruptions, workforce management, financial constraints, and delays due to regulatory and environmental factors.

- **Geographical Boundaries:**

The research is limited to construction projects within Saudi Arabia, including both public and private sector projects. The study will consider a wide range of project types, from residential buildings to large infrastructure projects, ensuring a comprehensive view of the causes of delays across various construction sectors.

- **Time Boundaries:**

The study will focus on construction projects completed or in progress over the past five years (from 2018 to 2023). This time frame allows for the analysis of recent trends and challenges in the construction industry within the country.

These boundaries help define the scope of the study and ensure that the findings are relevant to current construction practices in Saudi Arabia.

الفصل الرابع

النتائج والتوصيات

This chapter focuses on presenting and discussing the results related to delay in construction projects, as viewed from the perspectives of contractors, consultants, and project owners. The primary aim of this study is to thoroughly assess and understand the underlying causes of delays in construction projects within Saudi Arabia. By examining the viewpoints of these key stakeholders, the chapter seeks to highlight the various factors that contribute to time delays and their impact on the overall project delivery.

❖ Analysis of Project Delays: Jeddah Tower Case Study

Jeddah Tower, formerly known as Kingdom Tower, is a monumental project in Saudi Arabia, expected to reach over 1,000 meters in height. Its construction symbolizes technological advancement and economic ambition. However, despite its promise, the project has been plagued by delays.

The Jeddah Tower project has faced many delays since it started in 2013. This is mainly due to financial problems, difficulties in construction, and the impact of the COVID-19 pandemic.

To avoid similar issues in future large-scale projects, it's crucial to have a solid financial plan, carefully assess potential risks, use advanced construction methods, be flexible in the design, and have strong project management. Effective communication with all parties involved is also essential.

1. Financial Issues and Investment Delays

Funding Problems: The project faced financial constraints, particularly related to the availability of investments and the complexities of securing large-scale funding from both private and public sectors.

Economic Factors: Fluctuations in oil prices and economic downturns in the region have impacted investments and, consequently, the timeline for construction.

2. Technical and Engineering Challenges

Design Modifications: Design Modifications: The complexity of building the tallest tower in the world posed several technical challenges, such as wind engineering and advanced foundation work. According to the project's lead architect, Adrian Smith, "The engineering challenges are substantial. The tower must withstand high winds and seismic activity" (Smith, 2020).

Soil and Foundation Issues: The foundation work alone has been a significant cause of delay, with "more than 200 boreholes drilled to determine soil stability" (Construction Week Online, 2021).

3. Regulatory and Bureaucratic Hurdles

Permits and Approvals: Navigating the complex process of securing permits and obtaining approvals can be one of the most time-consuming and difficult aspects of a construction project. The process often involves multiple layers of government and regulatory bodies, each with its own set of requirements.

Safety Standards: Building codes are updated to address new risks, technologies, and materials. For instance, if a new safety protocol or standard is introduced for fire protection, structural integrity, or accessibility (e.g., for people with disabilities), construction projects might need to be modified to meet these updated requirements. This could include changing

materials, adding fireproofing systems, or ensuring that structural elements meet higher load-bearing specifications.

4. Political and Socioeconomic Factors

Government Priorities: Shifting national priorities, especially related to large infrastructure projects, can impact funding allocation or lead to political delays.

Geopolitical Instability: The broader regional political landscape, including conflicts or tensions, may have influenced the project's progress.

5. External Factors (COVID-19, Supply Chain Issues)

Pandemic Disruptions: The global COVID-19 pandemic affected supply chains, caused labor shortages, and introduced additional safety protocols, which delayed construction work.

Material Supply Delays: The logistics and supply chains for specialized materials and equipment, especially when dealing with construction at this scale, can often encounter bottlenecks.

6. Labor Shortages and Management

Skilled Labor Shortages: The complexity of the tower's design and the need for specialized skills in construction and design led to delays. "The demand for highly skilled engineers and workers on other major projects has put significant pressure on the workforce available for Jeddah Tower" (Saudi Construction Review, 2021).

7. Lessons Learned

- **Risk Management:** Understanding how effective risk management strategies could have minimized delays and prevented some of the issues encountered.
- **Project Execution Strategies:** Examining the project's execution strategies and how delays could have been mitigated through better planning, contract management, and collaboration among stakeholders.

❖ **Analysis of Project Delays: King Abdullah Financial District (KAFD) Case Study**

The King Abdullah Financial District (KAFD) is a major urban development project located in Riyadh, the capital of Saudi Arabia. It is designed to serve as a global financial hub and a key component of the country's broader economic diversification plans under Vision 2030. KAFD is intended to become a world-class financial center, hosting businesses, banks, financial institutions, and corporate headquarters.

Components of the Project

- **Office Towers:** The district features a number of skyscrapers and office towers, providing office space for multinational corporations and financial institutions.
- **Residential Units:** There are also plans for residential buildings catering to employees and residents in the area.
- **Retail and Leisure:** The development includes retail spaces, restaurants, and leisure facilities, such as hotels and conference centers, aimed at creating a vibrant mixed-use environment.
- **Transport Infrastructure:** The district is well-connected by public transport, including a metro station on Riyadh's expanding metro system, making it easy to access from other parts of the city.

Project Timeline

- **Initial Planning and Phases:**

- Describe the original planning dates and expectations for completion. The project was initially conceived around 2006, with major phases supposed to be completed between 2016 and 2020.

- **Revised Completion Dates:**

- Discuss the revised dates, citing changes in the timeline over the years. The first phase saw substantial delays, with the project now expected to stretch into the 2030s for full completion.

Here's a detailed breakdown of the causes of delays in the King Abdullah Financial District (KAJD) project.

1. Economic Factors

- **Global Financial Crisis (2007-2008)**

The global financial crisis had a profound impact on the ability of countries like Saudi Arabia to secure financing for large infrastructure projects. The global downturn led to a tightening of credit markets, affecting the availability of funds for mega projects like KAJD.

- **Fluctuations in Oil Prices**

Saudi Arabia's economy is closely tied to oil prices. Declines in oil prices often result in lower revenues, forcing the government to reallocate funding to more urgent sectors or projects, leading to delays in non-oil projects like KAJD.

- **Impact of COVID-19 Pandemic**

The COVID-19 pandemic resulted in construction delays due to workforce restrictions, disruptions in the global supply chain, and shutdowns of key industries, all of which slowed down the progress of KAFD.

2. Construction and Technical Challenges

- **Complex and Ambitious Design**

The KAFD project features complex, modern, and eco-friendly designs. The use of advanced construction materials, sustainability features, and the intricate nature of the design required longer construction timelines than initially estimated.

- **Delays in Approvals and Permits**

The construction of KAFD required numerous approvals and regulatory checks from various government agencies, and delays in these approvals contributed to the overall delays in the project.

- **Changing Designs and Specifications**

As the project evolved, there were several changes in the designs to incorporate newer technologies, higher sustainability standards, and other functional adjustments, which contributed to delays in the timeline.

3. Financial and Funding Issues

- **Delayed Investment and Financing**

Delays in securing timely investments, particularly from private sector partners, slowed the KAFD project. The Saudi government's financial reallocation during periods of financial uncertainty also impacted the availability of funding for the project.

- **Over-reliance on External Financing**

The reliance on international financing and partnerships posed risks, particularly during global economic instability, which led to delays in the flow of capital into the KAFD

-النتائج

Saudi Arabia has embarked on several large-scale development projects, among the most notable being the Jeddah Tower and King Abdullah Financial District (KAFD). These projects were envisioned to serve as monumental symbols of the Kingdom's economic growth, modernity, and transformation under its Vision 2030 initiative. The Jeddah Tower, once completed, was intended to be the tallest building in the world, while KAFD was designed to be a major financial hub. However, both projects have experienced significant delays, which have raised concerns about the feasibility and execution of such ambitious plans. This research aims to explore the general outcomes and impacts of the delays on various sectors of the economy, society, and Saudi Arabia's international image.

General Impact on the Economy: The delays in the Jeddah Tower and KAFD projects have significantly impacted Saudi Arabia's economy, particularly in the areas of real estate, construction, and foreign investment. Both projects were initially seen as key drivers of economic diversification under Saudi Vision 2030. The successful completion of these developments was expected to generate substantial revenues through commercial leasing, tourism, residential living spaces, and retail ventures. However, the delays have postponed these anticipated financial returns.

Impact on Real Estate Development: The real estate market in Saudi Arabia was expected to benefit from the commercial, residential, and retail spaces planned for both the Jeddah Tower and KAFD. These spaces were anticipated to drive demand for office buildings, apartments, and other commercial facilities in the region. However, the delays have led to

the stagnation of these markets, with investors and developers waiting for the projects to be completed before making further investments. As a result, the expected boost to the real estate sector has been delayed, impacting both local and international property developers who were waiting for these projects to materialize.

Impact on Construction Sector: The construction industry, which employs a significant portion of the workforce in Saudi Arabia, has also been affected by these delays. Contractors, engineers, and other skilled workers involved in the Jeddah Tower and KAFD projects have faced uncertainty due to halted or slow-paced work. This uncertainty has led to financial losses for construction firms and subcontractors who were reliant on these mega-projects for business. Additionally, the delays have disrupted the construction supply chain, with material suppliers and logistics companies facing difficulties in managing their inventories and operations.

Impact on Social Development: The Jeddah Tower and KAFD were envisioned to not only contribute to economic growth but also play a role in the social development of Saudi Arabia. Both projects were intended to provide modern, sustainable living and working spaces that would improve the quality of life for residents and workers. However, the delays have postponed these benefits, affecting the people who were supposed to move into the newly constructed apartments and offices.

1. **Housing and Commercial Space Shortages:** The housing market, particularly in Jeddah and Riyadh, was expected to benefit from the residential units in both the Jeddah Tower and KAFD. With the delays, the shortage of affordable and modern housing in these cities persists. Similarly, the retail and office space that was supposed to be available in KAFD is delayed, meaning businesses are unable to operate from these world-class facilities as planned.

2. **Local Employment and Skills Development:** Both projects were expected to create thousands of jobs for Saudi nationals, ranging from construction labor to high-level management positions in finance and real estate. The delays have stymied these employment opportunities, affecting the local labor market. Additionally, the international partnerships involved in these projects were expected to provide skills transfer and professional development for local workers, which has also been delayed as a result of the project halts.
3. **Urban Infrastructure Development:** The Jeddah Tower and KAFD were also meant to improve urban infrastructure, with advanced transportation, public amenities, and green spaces integrated into the developments. The delays have led to slower progress in improving the cityscapes of Jeddah and Riyadh, which will continue to impact the daily lives of residents and commuters in these areas.

-التوصيات

To mitigate the impacts of the delays in the Jeddah Tower and King Abdullah Financial District (KAFD) projects and ensure their successful completion, several strategic recommendations can be considered. These recommendations aim to streamline the execution of these mega-projects, boost investor confidence, and maximize the long-term benefits for Saudi Arabia's economy and global image.

1. Enhanced Project Management and Oversight

A critical aspect of overcoming delays is improving the project management and oversight processes. By implementing more robust project management frameworks, the developers and relevant stakeholders can better track progress, manage risks, and address challenges promptly.

Strengthening Project Leadership: Appointing a dedicated and experienced project management team with a clear mandate to oversee the completion of both projects is essential. This team should be empowered to make critical decisions quickly and be accountable for meeting deadlines.

Monitoring and Reporting Systems: Establishing a real-time monitoring and reporting system would allow stakeholders to assess the progress of construction, identify bottlenecks early, and take corrective action when necessary. Regular progress reports and transparent communication with investors and the public would also help manage expectations.

2. Securing Consistent and Diverse Financing

Financial stability is key to ensuring that both the Jeddah Tower and KAFD projects are completed on schedule. To avoid further delays due to financial constraints, securing diverse sources of funding is essential.

Diversified Funding Models: The Kingdom can explore a combination of public-private partnerships (PPP), direct investment from international corporations, and financing through global financial markets. This could help alleviate financial pressure from the government and developers, ensuring that resources are available for continued construction.

Investment Incentives: To attract foreign investors, Saudi Arabia could offer additional incentives, such as tax breaks, profit-sharing agreements, and guaranteed lease terms, which would make the projects more attractive and encourage more private-sector participation.

3. Enhancing Collaboration Among Stakeholders

The Jeddah Tower and KAFD projects involve multiple stakeholders, including government entities, private developers, contractors, and international consultants. Improved collaboration among these groups is vital to ensuring the seamless progression of construction.

Clear Communication Channels: Establishing clear and transparent communication channels between stakeholders is necessary for minimizing misunderstandings and inefficiencies. This can be achieved through regular meetings, digital platforms for updates, and a unified approach to decision-making.

Coordination Between Authorities: Government agencies responsible for land acquisition, permits, and regulatory compliance should work in close coordination to avoid delays in obtaining necessary approvals and clearances. Streamlining bureaucratic processes can significantly reduce time lost during construction phases.

4. Leveraging Technology and Innovation

Incorporating advanced construction technologies and innovative methods can accelerate progress and reduce construction delays. Given the scale of the Jeddah Tower and KAFD projects, the use of cutting-edge technology is critical to addressing engineering challenges and improving efficiency.

Digital Construction Tools: The use of Building Information Modeling (BIM), 3D printing, and other digital tools can enhance the accuracy of designs, reduce errors, and speed up construction timelines. These technologies also allow for better project visualization and more effective risk management.

Modular Construction and Prefabrication: Utilizing modular construction techniques and prefabricated components can help shorten construction time by allowing parts of the

buildings to be constructed off-site and assembled on-site. This method can significantly reduce delays caused by weather, labor shortages, or other disruptions.

5. Strengthening Workforce Development and Labor Management

Labor shortages and workforce inefficiencies have been a contributing factor to delays in the past. To ensure smooth construction in the future, addressing labor issues is essential.

Investing in Local Workforce Training: While international expertise is often required for large-scale projects, investing in the training and development of the local workforce can help mitigate labor shortages. By offering specialized training programs for Saudi workers, the country can build a more skilled labor pool capable of supporting these high-demand projects.

Attracting Skilled Foreign Workers: Additionally, efforts should be made to attract skilled foreign workers through better employment terms, efficient visa processes, and improved living conditions. A more diverse and skilled workforce will ensure that both the Jeddah Tower and KAFD projects are completed on time and within budget.

6. Managing Public Expectations and Communication

Effective communication with the public and stakeholders is vital for managing expectations and maintaining confidence in the projects. Public perception of these mega-projects can influence both local support and international interest.

Transparent Updates: Regular and transparent updates on the status of the Jeddah Tower and KAFD projects should be communicated to the public. This can be done through official reports, press releases, and media coverage, which would demonstrate progress and reinforce the Kingdom's commitment to completing these projects.

Marketing and Branding: As the projects progress, the Kingdom should launch marketing campaigns to generate excitement and renew international interest in the Jeddah Tower and KAFD. Highlighting milestones, technological advancements, and successful partnerships can help restore investor confidence and attract further business to Saudi Arabia.

7. Mitigating Risk Through Contingency Planning

Risk management is an essential component of any large-scale development project. To mitigate unforeseen setbacks, a comprehensive contingency plan should be in place for both the Jeddah Tower and KAFD projects.

Risk Assessment and Proactive Measures: Conducting regular risk assessments to identify potential challenges—such as economic shifts, natural disasters, or geopolitical events—and developing proactive mitigation strategies will help avoid further delays. Establishing a contingency fund would also ensure that financial resources are available to handle unexpected situations without derailing progress.

Flexibility in Timelines: While setting clear deadlines is crucial, incorporating flexibility into the project timelines will help manage the effects of any external disruptions. This would allow for adjustments without compromising the overall goals of the projects.

8. Prioritizing Environmental Sustainability and Smart City Features

Finally, both the Jeddah Tower and KAFD projects should prioritize environmental sustainability and smart city features. Incorporating green technologies and sustainable design elements will not only make the projects more attractive to investors but also align them with global trends in urban development.

Sustainable Architecture: Implementing energy-efficient building systems, renewable energy sources, and environmentally friendly construction materials can enhance the environmental value of both projects. This will also attract sustainability-focused investors and help position Saudi Arabia as a leader in green construction.

Smart City Technologies: The integration of smart technologies, such as automated transportation systems, high-speed internet infrastructure, and IoT-enabled devices, will make KAFD a cutting-edge financial hub and enhance the living and working experience in the Jeddah Tower. These features will increase the long-term value of both projects.

The delays in the Jeddah Tower and King Abdullah Financial District (KAFD) projects have presented significant challenges but also offer valuable lessons for future large-scale developments. By implementing the recommendations outlined above—strengthening project management, securing diverse financing, leveraging technology, improving labor management, and ensuring effective communication—Saudi Arabia can overcome current obstacles and complete these projects successfully. These steps will not only enable the Kingdom to meet its Vision 2030 goals but also position it as a leader in global real estate, construction, and financial services.

- Al-Ghafly, M. A. (1995). Causes of delay in construction projects in Saudi Arabia. *Construction Management and Economics*, 13(5), 369-378.
- Saudi Economic Review (2022). "Economic impact of Jeddah Tower delays on local development."
- Jeddah Municipality (2022). "Regulatory hurdles faced during the construction of Jeddah Tower." Retrieved from [Jeddah Municipality].
- Smith, A. (2020). *Engineering a World-Class Skyscraper*. Chicago: AS+GG.
- Arab News (2022). "Jeddah Tower delayed amid real estate slowdown."
- International Construction Magazine (2020). "COVID-19's Impact on Middle Eastern Mega Projects." *International Construction Magazine*.
- Alharbi, S., & Al-Tayyar, M. (2020). The Challenges of Building Complex Infrastructure: Case Study of KAFD. *Journal of Architecture and Engineering*.
- Al-Shammari, M., & Al-Mansoori, A. (2018). Project Delays in Saudi Arabia's Mega Construction Projects: Causes and Solutions. *International Journal of Project Management*, 36(5), 1227-1236.
- PwC Middle East, "Construction Delays in the Kingdom: Managing Complex Projects," 2020.
- International Construction Magazine (2020). "COVID-19's Impact on Middle Eastern Mega Projects." *International Construction Magazine*.

- Saudi Vision 2030 (2023). *The Vision of Saudi Arabia's Economic Transformation: Strategic Impacts of Mega Projects*. Government of Saudi Arabia. Available
- Al-Mohammad, M., & Al-Fahad, R. (2021). Real Estate and Financial Hub Development in Saudi Arabia: The Role of Mega Projects in Economic Diversification. *Real Estate Review*, 40(3), 101-115.
- Zahra, S., & Rashid, T. (2023). *International Investment and Economic Risk: The Case of Saudi Arabia's Mega Projects*. *International Business Journal*, 8(1), 67-78.
- Emaar Development Group (2021). *The Impact of Construction Delays on Mega Projects: Case Studies from the Middle East*. Emaar Group White Paper.
- Al-Momani, A. H. (2000). *Construction delay: A quantitative analysis*. *International Journal of Project Management*, 18(1), 51-57.
- Love, P. E. D., & Irani, Z. (2003). *The impact of project cost and schedule overruns on project performance*. *International Journal of Project Management*, 21(5), 341-350.
- Chan, D. W. M., & Kumaraswamy, M. M. (2002). *Developing a model for project delay in the construction industry*. *International Journal of Project Management*, 20(7), 456-463.

Delays in the construction industry are a global phenomenon, and the construction sector in Saudi Arabia is no exception. The construction industry plays a pivotal role in the economic growth of many countries, and in Saudi Arabia, it is a fundamental driver of national development. The sector not only contributes significantly to the country's GDP but also supports job creation, infrastructure development, and the realization of various mega-projects. Over the past decade, Saudi Arabia has embarked on some of the most ambitious construction projects in the world, including the Jeddah Tower, which is intended to be the tallest building in the world, and the King Abdullah Financial District (KAFD), designed to be a leading financial hub in the region. These projects are emblematic of Saudi Arabia's Vision 2030, a strategic plan aimed at diversifying the economy and reducing dependence on oil exports by focusing on sectors like tourism, real estate, finance, and entertainment.

However, despite the immense scale and strategic importance of these projects, delays have been a recurring issue. These delays, often resulting in the postponement of completion dates and cost overruns, have raised concerns among stakeholders, including investors, developers, and government authorities. They not only hinder the successful execution of these flagship projects but also have far-reaching consequences on the economy, international investor confidence, and the Kingdom's reputation as a leader in large-scale infrastructure development.

The importance of studying delays in the construction industry becomes evident when considering the significant financial and operational implications. Construction delays can result in increased project costs, disruption in timelines, and a missed opportunity to capitalize on the economic benefits associated with the completion of such developments. Furthermore, delays in high-profile projects such as the Jeddah Tower and KAFD can affect

the global perception of Saudi Arabia's ability to deliver on its ambitious plans, which are critical to its broader economic and geopolitical aspirations.

This research aims to shed light on the underlying causes of delays in the construction industry in Saudi Arabia, with a specific focus on high-profile mega-projects like the Jeddah Tower and KAFC. It explores how gaps between theory and practice contribute to these delays and examines how the construction industry in Saudi Arabia can better align project management practices with successful execution. There is a growing recognition that while construction management theories and frameworks are well established, their practical application often falls short in addressing the complex challenges posed by large-scale projects. These challenges include issues related to project financing, supply chain disruptions, labor shortages, regulatory hurdles, and the coordination of diverse stakeholders involved in the development process.

Additionally, this research will analyze the economic, social, and reputational impacts of construction delays on Saudi Arabia. Mega-projects like the Jeddah Tower and KAFC were expected to generate significant economic benefits, including attracting international investment, boosting tourism, and contributing to job creation. Delays in completing these projects have postponed these expected benefits, delaying Saudi Arabia's progress toward achieving the goals set forth in Vision 2030. The research will also explore the specific challenges faced by the Kingdom in managing such complex projects and provide actionable recommendations for addressing these delays and improving project delivery in the future.

The research will focus on understanding the broader implications of delays, not only in terms of financial costs but also in terms of the social and environmental aspects of the development process. It will explore how delays can affect local communities, disrupt urban development plans, and hinder the delivery of essential infrastructure services. Moreover, the

research will highlight the critical role of effective communication and collaboration among all stakeholders involved in mega-projects, from government entities to contractors and international partners.

Midocean University

College of Management

Department of Project Management



Delay Causes of Construction Projects in Saudi Arabia

Prepared by: Zakaria Shatat

Supervised by:

Dr. Faisal Abdul Hamid

Dr. Fayeze Jarad

Year:2024