



By:

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A study about:

**Delays in completing construction
Projects In the Ministry of
Energy and Infrastructure**

Introduction

The issue of delay in the implementation of construction projects is considered one of the important issues that began to take a great deal of attention due to the complexity of the projects in terms of design and methods of implementation. So that one of the main and important objectives in project management is the completion of the project on time, in addition to the fact that the delay of the project has negative effects on the value of the contract. The project, as well as the contract works, are linked to costly elements such as financial financing, equipment and labor, and for this reason, any delay in the project will negatively affect both the owner and the contractor alike, which has urged many researchers to conduct research and special studies in this area because of the burden this phenomenon poses on the development process. On the private and government sectors, what is meant here by delay is the amount of difference between the planned time of the construction project and the actual time to complete it.

In view of the economic and financial consequences that this phenomenon imposes on the country in general and on the economic environment of construction projects, studying this phenomenon is sufficient for attention, in addition to the negative effects on the parties to the construction process represented by employers, contractors and consultants, which are the additional costs resulting from the indirect costs spent on projects. Certainly, the sources and causes of this phenomenon will be confined to the employer, the contractor and the consultant, in addition to the supporting bodies such as governmental institutions that grant licenses and other non-governmental institutions that follow the construction process in general, and thus many causes can be classified according to their source or the party causing the form of change orders in projects or poor level The performance of the contractor or, on the other hand, the difficulty of completing some of the legal aspects in the approvals required for the project.

Since the issue of delay in construction projects has become with this level of interest, many researchers have carried out many researches and studies that focus on diagnosing the magnitude of this phenomenon, which focused on the causes leading to this problem, in Jordan a group of studies in this regard have been carried out to reach the truth of the causes. The main reason leading to delays in construction projects.

As one study showed that the main reason for delay is the change, whether from the employer or the consultant, in addition to other reasons related to economic changes and weather conditions, while another study showed that the financial potential of the employer and the delay in making decisions regarding problems. In projects that have a big role in delaying work in the project, on the other hand, the study in the Kingdom of Saudi Arabia has proven that the employer is the main reason for delay, which is the change in the project based on the desire of work, and the reasons for delay may change in other countries, which may be represented in The contractor's financial and administrative management of the project is poor. In the Sultanate of Oman, the study concluded that the main reason for the delay in work is planning and programming projects.

In a study of project delays, Dr. Firas Qadri Dadikhi, in his book (A Guide to Calculating Delays in Projects for Preparing Claims), classified the subject of delay for several sets of definitions that are concerned with delay, such as:

- Executing work later than expected.
- Implementing what was planned late.
- Failure to implement in a timely manner.

As the author stated, "Any of these previous definitions can describe the delay that occurs to an activity within the timeline. In construction projects, as in other projects where scheduling is used to plan work, delays are common. The delay is determined if the project is," Or some due dates, such as mark points, will be later than your planning dates" .⁽¹⁾

The author divided the classification of delays into four main ways:

- 1- Critical or non-critical delays
- 2- Excusable or unexcused delays.
- 3- Compensable or non-compensable delays.
- 4- Concurrent or asynchronous delays.

While determining the effect of the delay on the project, the analyst must determine if the delays are critical or not critical, and he must also determine the delays if they are concurrent, and it has been mentioned that all the delays that have been identified in the analysis will be excused or not excused, and the delay can also be classified into an acceptable delay For **compensation or non-compensation.**

1. Delays critical versus non-critical

The focus is first on the delays that affect the progress of the project as a whole - the end date of the project - or the critical delays that affect the completion of the project, and the delays that affect the completion of the project are considered critical delays. As for the delays that do not affect the completion of the project, they are called non-critical delays. The writer mentioned that the concept of critical delays results from time programs in a critical path way, where determining critical activities is the primary part of the program, regardless of whether most projects contain critical activities if those activities are delayed, which will delay the end date of the project.

Determining the activities that control the end date of the project depends on the following:

- The project itself.
- Contractor's plan and schedule (especially the critical path method)
- Contract requirements regarding work sequences and phases.
- Material limitations of the project,
- How the work is carried out from a practical point of view.

Regardless of the project analysis method and the time programs for finding delays, the analysis is considered accurate if it takes into account contemporary information on the occurrence of delays, as contemporary information depends on daily reports, timelines and any other available data related to work that can show the circumstances surrounding the delays.

2. Excused delays versus unexcused delays

2.1 Sorry delays

Excused and unexcused delays were divided, as forgiven delays are the result of unforeseen events in relation to the contractor's contract or the subcontractor's contract, depending on common clauses in the specifications of public companies. Delays resulting from the following events can be classified as excused delays:

- General workers' strikes.
- Fires.
- Floods.
- Fate and destiny.
- Changes resulting from the project owner.
- Errors and omissions from plans and specifications.
- Different site conditions or the emergence of hidden conditions.
- Unusually severe weather fluctuations.
- Intervention by external organizations, such as organizations concerned with the environment.
- Negligence by government institutions, such as inspecting the reinforced concrete before casting by the municipality

And before the analyst concludes whether the delays are excused based on the previous definitions only, he must refer to the contract documents and take decisions regarding the delays according to the clause specified in the contract, and the factors that must be considered in order to certify the delays that may occur to the project and which Supports granting additional time over the contract period.

2.2 Unexplained delays

Events that fall within the contractor's area of control or those that are foreseen are called unexcused delays, and examples of unexcused delays are:

- Late performance of subcontractors
- The late performance of suppliers.
- Wrong employment by the contractor or by sub-contractors
- Project workers strike due to failure of the contractor to meet labor requirements or due to unfair practices against workers.

Some contracts are considered delays resulting from suppliers as excused delays if the contractor can prove that he bought or requested the materials within the project period, but due to circumstances beyond his control the materials did not arrive, and other contracts such as these delays are not considered as excused delays, so both the project owner, designer, and responsible As for the contract specifications, the documents are clear enough before signing the contract and that the contractor fully understands the excused and unexcused delays that the contract considers.

3. Delays that are compensable versus non-compensable

The writer defined compensable delays as delays that entitle the contractor to obtain additional time and additional financial compensation. As for the delays that are not indestructible, it means that despite the occurrence of excused delays, the contractor is not entitled to additional financial compensation. Whether the delays are compensable or not, they depend primarily on the terms of the contract.⁽²⁾

4. Concurrent delays

The concept of simultaneous delays is part of the analysis of project delays, that the synchronization discussion has a major role in allocating responsibility for losses resulting from the delays in activities located on the critical path, and we can say that simultaneous delays are delays separate from the critical path that occur at the same time.

4.1 Simultaneous delays on separate critical paths

This situation occurs when the separate critical paths are simultaneously delayed, for example, if both the audit of foundation plans and the deep digging task are located on the critical path and are necessary for the beginning of the foundation drilling task, and both are scheduled to end on the same day.

4.2 Concurrent delays on the same critical path

Examples of simultaneous delays, for example, are business delays due to workers 'strikes, and simultaneous failure of the project owner to obtain the necessary approvals, which led to simultaneous delays within the same period. The workers' strike is an excused but not compensated delay, and the lack of necessary approvals is an excused and compensable delay. But in fact, they are not simultaneous delays, but rather are simultaneous reasons for the same delay, and therefore the delay analysis. The critical path was delayed 1 day due to the delay in the start of activity 2, and in this case both the project owner and the contractor are responsible for the delay, as for the question about the additional time and additional financial compensation is considered a legal question And his answer in the context of the contract and the prevailing law of the case.

4.3 Methods for assessing concurrency

Construction contracts consider the following proposals:

- "Devlin" method: This method says that if two reasons are jointly involved in the occurrence of the delay, and one of them violates the contract, then the party responsible for that violation will be responsible for the losses resulting from that delay.
- The "**Dominant Cause**" method: This method says that if two causes are combined in the occurrence of the delay, then the main and effective controlling cause will be responsible for the losses resulting from that delay.
- "**Burden of Proof**" method: This method says that if two reasons are jointly involved in the occurrence of the delay, and the claimant party has violated the contract, it is the responsibility of that party (claimant) to show and prove that the losses resulting from that delay were caused by the other party. It is not due to breaching the contract.
- "**Malmaison**" method: It is the most used method as it is considered one of the modern methods of evaluating the simultaneous delays. It appeared in 1999, and it is similar to the "Devlin" method, but it is more beneficial to the contractor, as it says that the contractor should be entitled to more additional time if he experiences simultaneous delays for which he is not responsible.
- "**First-Past-The-Post**" method: It is a simplified method sometimes used. It depends on the logic of parallel delays. It says that the first reason for the delay will be used first to assess the effect on the delay of the project's end date, while other reasons are ignored until they start. These causes affect the end date of the project, and the effect of the first cause ceases.
- The "**Apportionment**" method: This method is explained in the previous paragraph. ⁽¹⁾

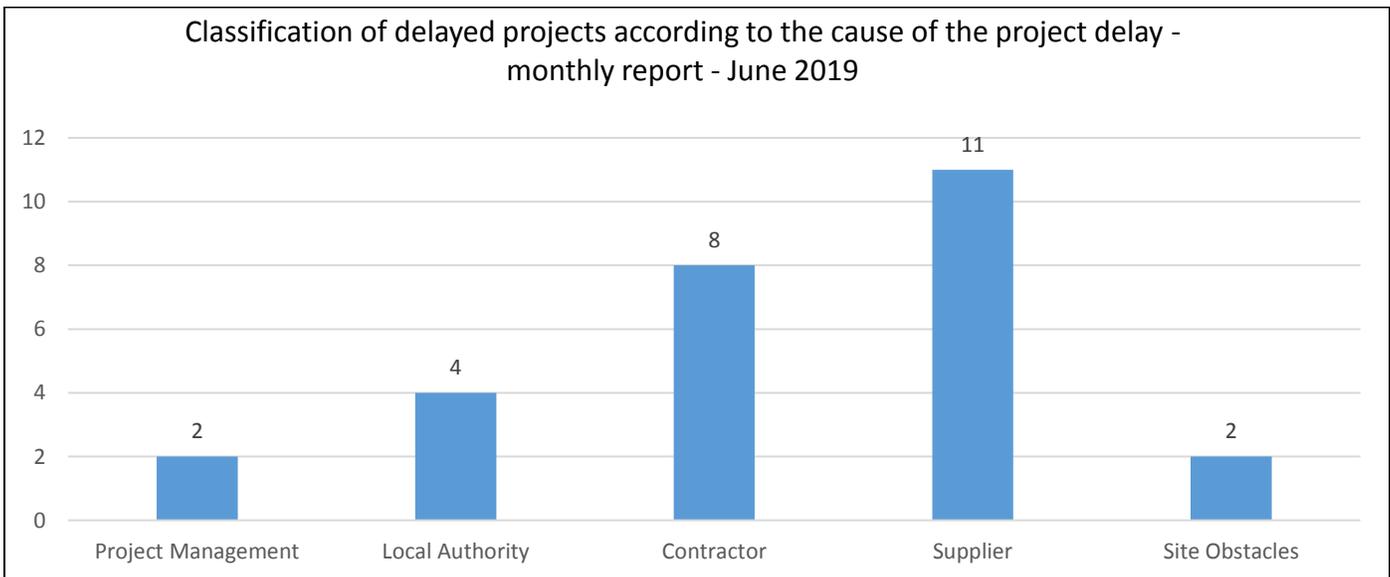
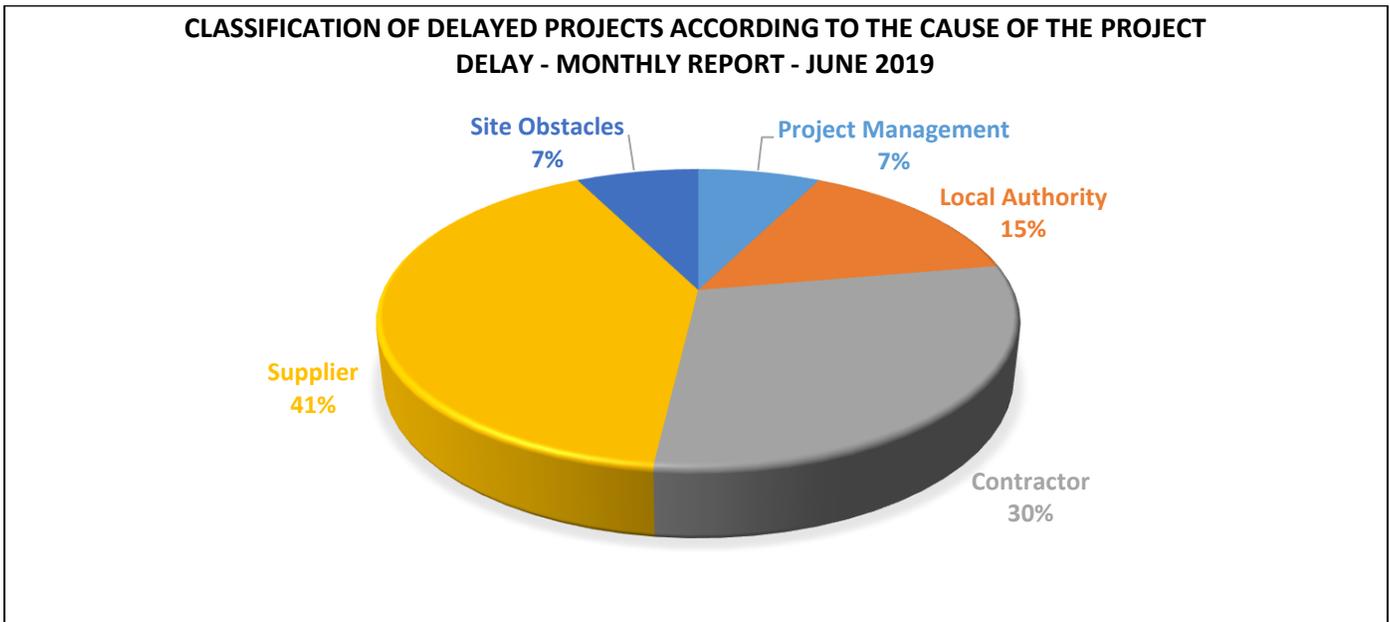
An analytical study:

A comparison was prepared with all the Ministry of Energy and Infrastructure projects being implemented in 2019 according to the monthly report, and the delayed projects were sorted and the reasons for the delay identified for each project, according to the following table:

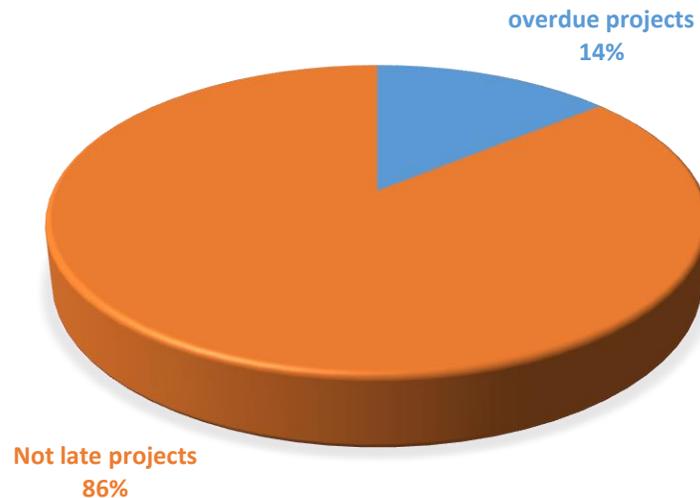
Monthly report on implementation, maintenance and additions projects - June 2019						
#	Project	The Delay Reasons	The delay responsibility?	Extension day	Delay %	Elapsed time
1	Maintenance of the Social D Center in RAK	variation order	owner	162	0	260%
2	Additions to Ibrahim bin Hamad Obaid Allah Hospital - Ras Al Khaimah	variation order	owner	30	0	94%
3	Maintenance of Al Hamham School - RAK	delay by owner (MOE)	owner	0	1	74%
4	Umm Al Quwain Hospital Maintenance	Delays from non-contractor parties	owner	60	0	89%
5	Additions to the National Media Council building	Additional requests from the owner -lack of budget for additional work	owner	-	21%	80%
6	Completion of housing construction - RAK	changes in the internal work	owner	120	7%	91%
7	Completion of the construction of 11 housing units for citizens in the Northern Emirates	Delay in choosing interior finishes by the owner	owner	-	9%	100%
8	Linking Sheikh Khalifa Hospital to the federal road system	variation order	owner	171		76%
9	Design and construction of pedestrian crossings in different regions of the country - Umm Al Quwain	Delayed approval of the bridge design	Consultant	-	14%	278%
10	Design and construction of pedestrian crossings in different regions of the country - Ajman	Delays by local Authority	local Authority	-	3%	80%
11	Infrastructure works to construct 500 homes for citizens in Oud Al Tina - Dubai	Delayed issuance of NOC from local Authority	local Authority	-	-	-
12 & 13	Construction and completion of a road link to a mosque in the Azan area - Ras Al Khaimah	Receipt of the coordinates line from the municipality - failure to approve the design plans from the municipality on time -	Local Authority & Contractor	150	50%	107%
14 & 15	Construction and completion of a single road link to connect to the Ring Road - Khor Fakkan	Design plans were not approved for changing the road level from planning -	local Authority & Contractor	120	40%	106%
16	Construction and completion of National Houses - Dubai	variation order1 + 2 - delay in supplying and installing some works	the supplier	365	-	90%
17	Maintenance and development of Hamad Bin Abdullah Road	Communication line transmission works	External obstacles	-	-	80%
18	Construction and completion of internal roads and links in the eastern region	The presence of a service network in the project area	External obstacles	250	4%	99%
19 & 20	Completing the construction National Houses - Eastern region	Delayed approval of finishing materials	Ministry & Contractor	240	5%	76%
21	Completion of National Houses	Poor distribution of labor by the contractor	contractor	-	9%	53%
22	Completion of 12 housing units in separate areas of the country - JG Contracting	Delay due to contractor slowness in implementation	contractor	-	18%	68%
23	Project to complete the prison of dimensions and deportation - Sharjah	Delay due to contractor slowness in implementation	contractor	-	12%	107%
24	Additions to the Al Fali Health Care Center - Sharjah	Contractor delay in completing work	contractor	0	%10	250%
25	Maintenance of the wall of Ammar School - Masfoot - Ajman	Contractor delay in completing work	contractor	-	10%	260%
26	Construction and completion National Houses - Eastern	Delay due to contractor slowness in implementation	contractor	-	13%	247%
27	Completion of National Houses construction works for citizens - Group Two - Tostars Contracting - Sharqia	Delay due to contractor slowness in implementation	contractor	270	14%	111%
28	Completion of National Houses - Northern Emirates	Decision to withdraw	contractor	-	10%	114%

Through this table, the reasons for the delay and those causing the delay for each project were classified as follows:

Classification of delayed projects according to the cause of the project delay - monthly report - June 2019								
The cause of the project delay	Project Management	Local Authority	Owner	Contractor	Supplier	Site Obstacles	Total delayed projects	Total projects June 2019
Total	2	4	8	11	1	2	28	173
% of the total delayed projects	7%	14%	29%	39%	4%	7%		



**The number of delayed projects in relation to the total projects of the Ministry of Energy
and Infrastructure
Monthly Report - June 2019**



As seen from the table that 40% of the late projects are caused by the contractor, then it is followed by the owner and then the local departments, where the contractor plays a major role in completing the work and delivering the project on time.

The summary

Delay in construction projects is one of the most important causes of disputes between the contractor and the owner, due to the negative consequences of delay, and therefore most construction contracts contain a number of contracts that focus on the importance of implementing the project during a specific period and according to the schedule set for the project, where we can shorten the reasons for the delay in the implementation of projects Constructivism in the following factors:

- Weak technical and administrative project management.
- Poor financial control, the absence of a clear financial and administrative system for the project, in addition to administrative corruption.
- Not conducting a study of the proposed bids and the companies that are awarded the bids in terms of staff and ability to implement.
- Unexpected financial variables in the markets.
- Failure of the parties concerned to prepare the materials.
- Sudden environmental factors such as weather conditions - fires and earthquakes.
- Political factors such as wars.
- Failure of the necessary designs and documents to be completed and approved by all concerned authorities before the start of implementation.
- Failure to schedule cash liquidity throughout the project implementation period, which causes hindrance in implementation.
- Lack of adequate labor at the right time.
- Failure to secure required materials in a timely manner.
- Failure to study the feasibility of implementing the project accurately.
- Failure to study project costs well.
- Not Considering the site conditions or timing. ^(3,4,5)

Recommendations

- Providing technical and administrative staff with experience in implementing and following up the project before starting work on the project.
- Study the time period correctly.
- Discussing all project conditions and project completion according to plan to find appropriate solutions at the right time.
- Existence of a budget under risk.
- Forming a work team for a higher committee for the project, with periodic meetings and direct reports to all concerned managers, the general manager and the committee.
- Follow up on issuing daily reports to the implementers of the project in order to avoid many causes of delay.
- Monitor the provision of raw materials first, according to the schedule.
- Ensure that the owner has enough liquidity to pay the contractor's dues.
- Determine the estimated cost of the project before offering and exclude the price offers that are greater or less than 5% of the estimated value of the project.
- The commitment of the main contractor to pay the monthly financial dues to subcontractors without delay.

Conclusion

Through this study, we can say that the construction projects are similar to the rest of the activities and activities in the Arab countries, which suffer from slowdown for many reasons, which can be limited through studies in the weakness of the initial study in terms of financial, economic and technical aspects, which is attributed to the lack of clarity in the objectives of many construction projects, We can also respond to this phenomenon for two basic factors: the first is the technical weakness of the human resources based on approving such projects, and the second factor is the lack of clarity of the elements of the construction project, represented in cost, time and quality.

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