

ROOT CAUSES OF CONSTRUCTION PROJECT DELAYS IN DUBAI

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Dubai presents a special set of circumstances where the construction industry operates. Factors such as rapid growth in construction, tight construction schedule, unique architectural features, the involvement of international contractors and consultants, multinational work forces, unique culture and religion, readily available investment, and mixed contracts and conditions generate particular impacts on construction project progress. With the impacts of these factors, delay is a common problem for construction projects in Dubai. This research aims to identify the most important causes of delays in Dubai construction projects. A series of questionnaire survey and interviews were conducted to explore each project participant's contributions to the causes of delays. The results show that the major causes of delays vary from the unrealistic project duration, nominated sub-contractors, and the culture impacts.

Keywords: claims, contracting, delays, project management.

INTRODUCTION

During the last two decades, Dubai has witnessed a remarkable growth in its economic and social development. Major social development projects are established by both public and private sectors, which include housing projects, hospitals, schools and educational institutions and other utilities. Given its cultural background, procurement system and operational environments, the booming building and construction industry is facing many unique challenges which affect project progress. For example:

- Large scale and high quality requirements: Numerous large projects (e.g. the Palm, Dubai International Airport extension, Dubai Marina, Souk Al Nakheel) were initiated in the last few years. These developments request high quality, not only in workmanship and construction materials but also in design for an upscale lifestyle. The design, construction and management of these projects are challenging to the local construction industry.
- International involvement: Since the indigenous companies often do not have the qualifications to design, construction or management these projects. Foreign companies are involved in all the industry sectors. They bring the state of art construction technology and management techniques, however, many of them are involved in contractual claims and disputes with project delayed and cost overrun.
- Traditional procurement approach: So far, most of the construction projects adopt traditional procurement approach. FIDIC is a widely used as the general

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conditions of contact. The consultant, often from abroad, is responsible for designing the project and preparing the contract documents.

- Large amount of small contractors: There are a large number of small construction firms with a capital less than a million Dirhams, who are incapable to work on large scale or middle-sized projects. They often delay their work due to the limited resources. It is remarkable that these companies are easily affected by the fluctuation of the market.
- Over commitment of construction firms: given the high demanding industry, most of the construction firms are over-loaded by taking more projects than what they can handle. The multitude of projects often beyond their capacity and cause delay in delivery.
- International workforces: The workforces employed in projects are of mixed nationalities, which bring different traditions, rules, habits, religions. For example, the religions holidays include holy Friday for Muslims, Sunday holiday for Christians, and regular holidays and festivals for Indians. The impact of such a multi-national workforce to construction is significant.
- Lack of skilled labour and high quality professionals: There is a high demand for skilled labour and professional in the local market. Many companies suffer from the high turn over of skilled technicians, engineers and labours. The impact is quite severe during the high peak of construction period.
- Wrong time estimation: With more than 95% of the workforces from south Asia, they are not acclimatised to the Gulf weather especially in summer. This often reduces the productivity and delays project progress. Thus, the work programmes from the clients or the contractors need to be checked by experience planners to include hot season adjustment in order to avoid over optimistic programme.
- Language barrier: In Dubai, the contract language is always Arabic and then translated into English. Most of the project participants prefer to speak and write in their own language without employing qualified interpreters. This affects the communication, progress and quality of work. Using the Arabic language in the contract documents is an important issue and most of the construction companies have not resolved this problem.
- Communication with the client: Unlike other countries, the clients in Dubai have absolute power in the project. When the client visits site, s/he may issue change orders which must be obeyed. On the other hand, they do not always see the necessity for prompt action with respect to their contractual obligations. Some words such as “Insha’allah” which mean in English “When God wants” are very familiar words and most of managers and site engineers use it as a promise which is a part of Islamic tradition culture. Foreign engineers do not understand the deep meaning of that word and may consider it as a part of uncertainty that causes disputes when executing the project.
- Local regulations and customs: Law of Sharia, procedures and formalities for work permit and visa application and other local regulations (e.g. application for construction or enter permits) could generate critical impacts on project progress. For example, the construction work in free economic zone (FEZ) needs special permits which are issued under the control of the full control of FEZ.
- Local partners: There is a legal requirement for foreign companies to form “partnerships” with local companies in order to qualify to tender for construction works, and this also applies in sub-contracting sectors. As a

consequence, there is often a difference in the working procedures and systems operated by foreign and indigenous companies, and also within “partnership” companies. The situation is compounded in construction where there are many parties involved in a project. According to the government regulations, the local must have at least 51% share of the joint venture which authorise them to make immediate and important decisions, if conflicts rise between partners. It is not easy to change a local partner’s decision if it has been confirmed. This can adversely affect the work progress in construction projects.

Given such a complex construction environment, it is not surprising that many projects are delayed. Project participants are involved in protracted contractual claims and disputes, often resolved either by arbitration, significant compromise or legal processes. This paper presents the outcome of a research project which aims to identify the primary causes of project delays in Dubai construction project and to categorise these causes in terms of the impacts upon the project completion time as well as the contributing parties.

COMMON CAUSES OF PROJECT DELAYS

Given the severe impacts of project delays, it has been widely studied by researchers from different countries (Bramble and Callahan 1992, Mansfield *et al.* 1994, Assaf, and Mohammed 1995, Al Kass and Mazeroll 1996, Thorvaldsson *et al.* 1996, Odeyinka and Yusif 1997, Scott 1997, Kumaraswamy and Chan 1998, Al Khalil 1999, Odeh 2002, Aibinu'A and Jagboro 2002, Battaineh 2002, Hussein 2002, Crawford and Frimpong 2003, Koushki and Kartam 2005, Lo *et al.* 2006, Abdul Rahman and Yahya 2006, Ajibade and Henry 2006). Table 1 summaries the general causes of project delays identified in these research projects. 10, 13 and 30 causes of project delays are identified contributed by the client, the consultant or the contractor respectively.

Table 1: General causes of delays

	Client	Consultant	Contractor
Factors, Reasons and Causes of delay	Regular interference and poor communication	Incomplete contract documents	Inappropriate organization management
	Variation order and late approval for payment	Incomplete drawings	Lack of technical professional in the organisation
	Late supply of information and late decision making	Poor design management	Unsmooth external and internal communications
	Project objectives are not very clear	Slow response	Lack coordination with sub-contractors
	Nomination of Sub-contractors and suppliers	Delayed approval of drawings and BOQ for construction	Centralization with top management
	Many provisional sums and prime cost	Inadequate duration for inspection	Delayed mobilization
	Duration is not enough for constructing the project	Experience of staff in management and technical inspection	Incompetent contractor staff
	Irregular payments and disturbed cash flow of main contractor	Delay in submittal and approval	Poor planning, scheduling or resource management
	Routine of government authorities and approvals	Poor communication between consultant staff	Poor quality control
	Irregular attending of weekly meetings	Poor quality control	Congested construction site

Client	Consultant	Contractor
	Incompetence to contractor's technical enquiries	Mistakes during construction
	Changes in drawings and specifications	Lack of experience of similar projects
	Incompetent technical staff	Shortage of materials
		Poor quality of materials
		Materials specifications
		Delay of delivery
		Shortage of manpower
		Inadequate skill of manpower
		Low productivity
		Unavailability of equipments on request
		Wrong allocation of equipments on site
		Financing the project by contractor
		Irregular payments of sub-contractors
		Unexpected weather conditions
		Inadequate site investigation
		Different nationalities of workforce on site
		Problems with neighbours
		Preparing the method statement for each work activity
		Work permits

DATA COLLECTION

The survey was designed based on the 53 causes of delay shown in Table 1, to which participants were asked to indicate the level of importance of each cause. These causes were categorized into three major groups:

- The Client: Related factors include finance, payments, client interference, slow decision and unrealistic contract duration.
- The Consultant: Related factors include contract management, preparation and approval of submittals and materials and site supervision.
- The Contractors: Related factors include site management, improper planning, inadequate contractor experience, mistakes during construction and preparing the construction methodology.

Other significant issues of concerns such as project location, site conditions, neighbours, and changes, materials including quality and shortage and the nominated Sub-contractors were also considered in the questionnaire survey in Dubai. Two rounds of survey were conducted. In the first round, questionnaire was distributed to 52 construction companies who were working on large and medium projects in Dubai with project values from US \$ 41Million to US \$ 150Million. Questionnaire was sent to the general managers, manager of technical affairs, project department managers, site project managers, chief engineers and construction managers who have specific experience in this area that can provide an insight into both underlying causes of delay and their relative effect. The second round of the questionnaire was distributed to 10 construction firms to further clarify some of the key issues raised in the first round of questionnaire survey. The response rate in both round of questionnaire was 100%.

RESULTS AND DISCUSSION

The results of the survey were analysed using a severity weighting method. Value of 5 is considered as 100% severity, value of 4 is considered as 85%, value of 3 is considered as 65% value of 2 is considered as 45% and value of 1 is considered as 25% of severity (for details see Atout, 2008). The average of the severity causes by the client, the consultant and the contractor ranging from 45% to 85% percentage wise.

The result of the analysis shows that:

- The client’s contribution to causes of delay is of 11.76% (4 out of 34 major causes)
- The consultant’s contribution to causes of delay is of 26.47% (9 out of 34 major causes)
- The contractor’s contribution to causes of delay is of 61.76% (21 out of 34 major causes)

The result also demonstrates a high consistency between the causes of delay in Dubai construction project (Figures 1, 2, 3) and the general causes identified by previous researchers.

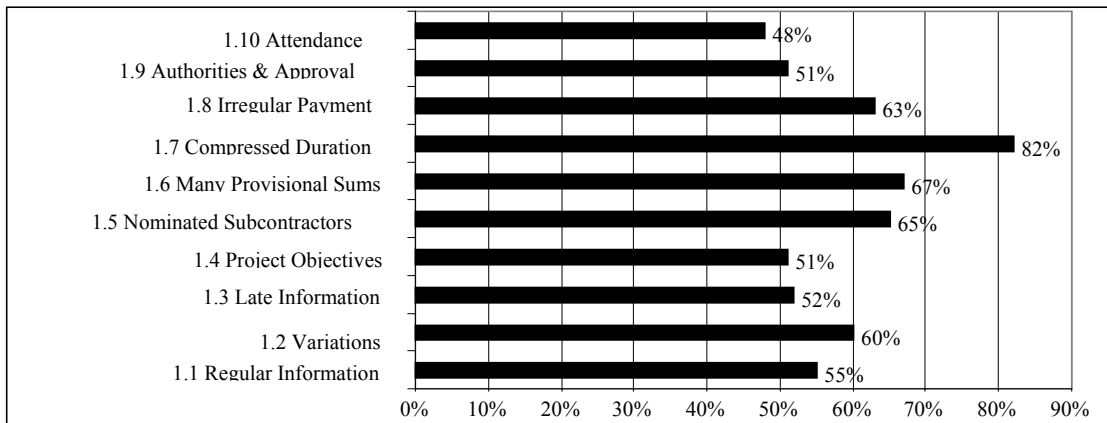


Figure 1: Factors of Delay Caused by the client

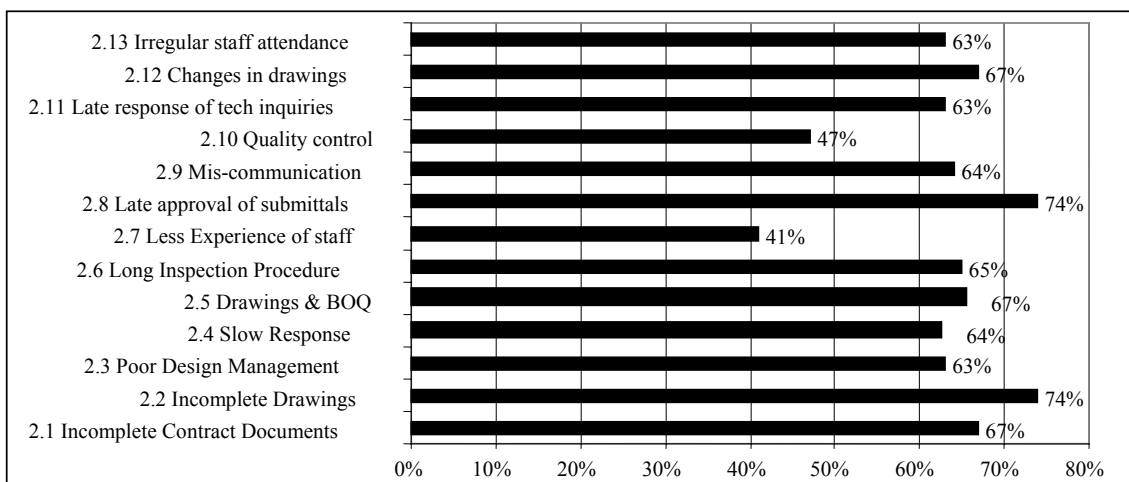


Figure 2: Factors of Delay Caused by the consultant

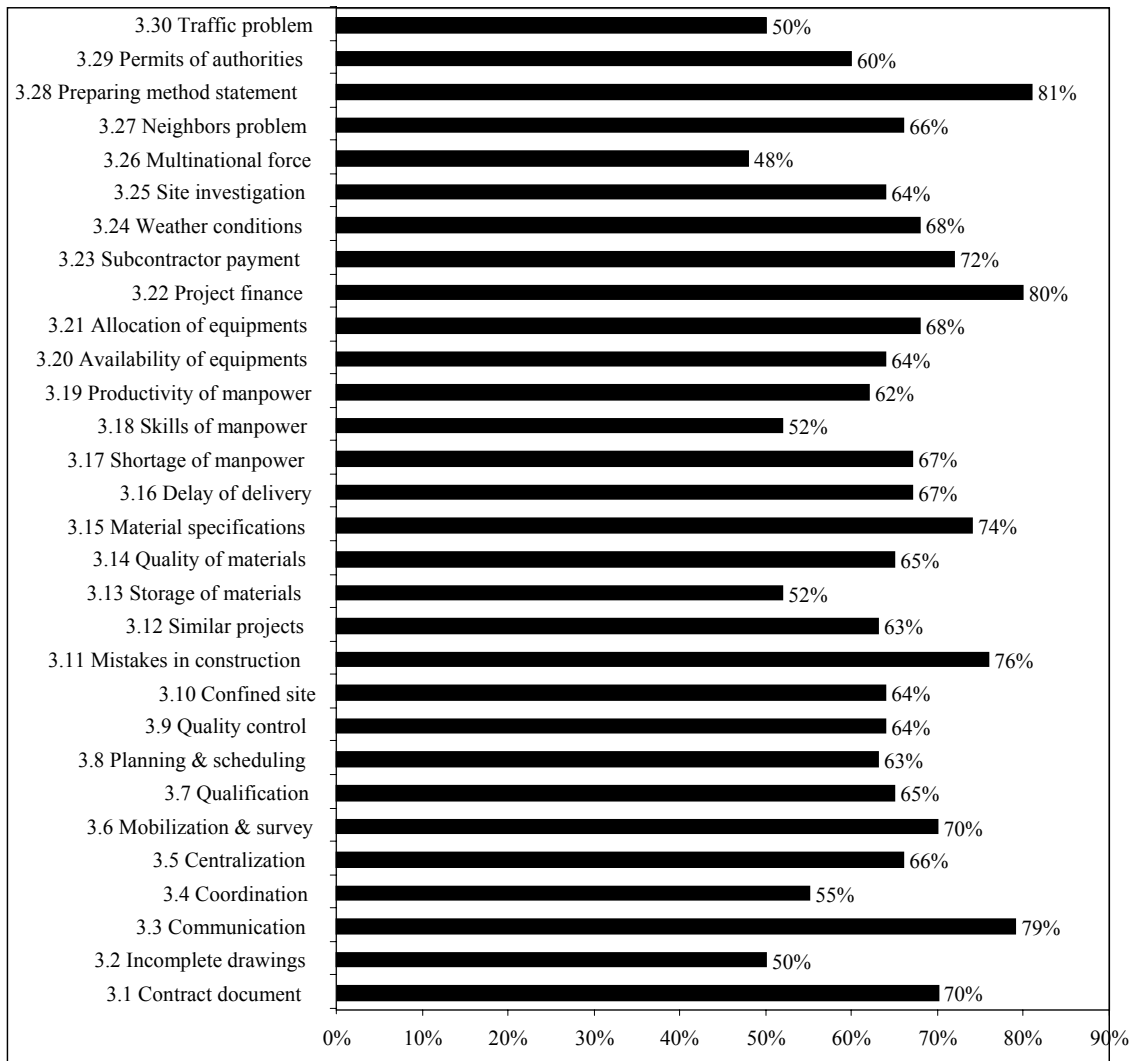


Figure 3: Factors of Delay Caused by the contractor

The follow section outlines the top five causes contributed by each project participant.

A) Key Causes from the Client

The causes of delay original from the client could be more important than from the consultant and the contractor because decisions made by the client significantly affect others.

A-1 Unrealistic Control Duration:

Clients are looking for a rapid return on their investment. In the UAE it is usual for a client to stipulate a completed design date within which consultant may not appraise designs sufficiently. This results that design has a lot of changes during construction.

A-2 Many Provisional Sums and Prime Cost:

Clients always like to leave some unquantifiable items in the bill of quantities, this prevents the contractor from estimate these items on time, and when the details of this bill are given (at very late stage), the work programme will be disturbed and the main contractor will find difficulties in achieving the target of the project.

A-3 Nomination of Sub-Contractors and Suppliers:

Most clients prefer their own sub-contractors or suppliers for some specialized work. They often instruct the contractors directly through the consultant to enter the sub-contract agreement based on limited conditions that may not suit the main contractor such as an advanced payment, duration, penalties, submittals and approvals. If the main contractor rejects these terms, conflicts will occur and delay will progress until a final agreement is signed between those involved parties.

A-4 Client's irregular Payment to the Main Contractor:

Delay in monthly payment from the client significantly disturbs the contractor's cash flow. This in turn affects the payments to sub-contractors, who are obligated to purchase material from suppliers. Project execution will be consequently affected financially. This will be reflected in the work progress and it can cause major delay to the project.

B) Key Causes from the Consultant

The consultant offices in Dubai are reluctant to refuse potential commission and follow a policy of "we are always ready to design your project". The design offices are often overloaded due to rapid development in construction in the city. Most of them do not have sufficient time and lack of effective management, which affects the quality of the work and consequently reflected on the contractors' performance.

B-1 Incomplete Drawings:

If the client requests an unrealistic deadline for design, large margins of errors will appear in the project drawings and specifications. Conflicts often appear between drawings from different disciplines. This is considered as a delay factor from the consultant side.

B-2 Delay in Approval of Documents:

It is time-consuming and complex process for consultant to approve documents submitted by the constructor (e.g. method statement or specifications). It is reported that the contractor can rarely get the approval from the consultant in Dubai.

B-3 Incomplete Contract Documents:

The Consultant has the full authority to issue changes, correct the mistakes in the drawings and the discrepancies in the contract document on behalf of the client. However the consultant's site staff does always not have confidence in issuing instructions until they discuss with their top managers. The contractor often cannot receive instructions about those discrepancies in time.

B-4 Changes in Drawings and Specifications:

Some engineers from the consultant's side do not have enough experience in design practices. Some problems in the design cannot be found until the contractor inquires about them in the construction. It takes extra time for municipality to approve new design solutions, for instance.

B-5 Duration of Inspection Procedure:

Consultants inspect the project to make sure that the project meets the standard of quality. This work is carried out by qualified engineers and authorities. However due to lack of the specialists, some projects could be inspected on time.

C) Key Causes from the Contractor

As illustrated in Figure 3, most of the project delay factors in Dubai construction projects are attributed by the contractor.

C-1 Preparing the Method Statements:

Project manager should establish detailed method statements. Most of them in Dubai project do not have enough time to prepare for method statements as they often have to play more than one role (e.g. site manager and quantity surveyor).

C-2 Financing Project by the contractor:

When contractors receive advanced or monthly payment from the client, most of them may use the money to finance other urgent or more profitable projects. It often leads to the problems such as shortage of material, delayed payment to sub-contractors, etc.

C-3 Organizational Chart:

Project manager should implement an effective human resource management. However, due to lack of experienced technical staff and time constraints, most of posts cannot be filled by staff with required experience or knowledge.

C-4 Communication Externally and Internally:

Contractors have to frequently communicate with the other project participants. While in the Dubai construction participants could come from different countries, misunderstanding among them often happen because of the different cultural backgrounds.

C-5 Mistakes during Construction:

With the high demand of workforce in the local construction market, the majority of the labours are from South Asia without adequate training or limited experience. This often leads to poor workmanship. Some work has to be re-done or repaired before the consultant or quality control engineers could accept them.

CONCLUSIONS AND FURTHER STUDIES

Delays are a major problem suffered by most of the construction projects in Dubai whilst the causes of delays and the procedures to avoid delays or mitigate the impacts of delays are still not fully understood by project participants. This research discussed the specific operational environment of Dubai construction projects and investigated the root causes of the delay contributed by the major project participants.

Unlike other countries or regions, the construction projects in Dubai face many special challenges such as the unique cultural, high architecture and quality requirements, short of workforce, and international construction teams. These constraints make the causes of delays different from other countries. For example, unrealistic project duration, many provisional sums and prime cost, nomination of sub-contractors and suppliers, client's irregular payment to the main contractor and variations are the top five causes of delay contributed by the client. Incomplete drawings, delay in approval of documents, incomplete contract documents, changes in drawings and specifications, and duration of inspection procedure are the major causes contributed by the consultant. Preparing the method statements, ill-financed project, inappropriate organization management, unsmooth external and internal communications, and mistakes in construction are the top causes contributed by the contractor.

Based on the outcome of this research, further research will be conducted on how each party should control their root causes of project delays. More specifically, this includes the control of cultural impacts, the contract and coordination with nominated sub-contractors and suppliers and the adaptation of FIDIC conditions of contract. The latter has been raised by many of the project participants as need to be further studied when it is used in Middle East.

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