Study on Organization and Conflict of International Construction Projects: Case Studies of Chinese and Japanese International Contractors in China and the UAE

Yue Li, liyue@archi.kyoto-u.ac.jp
Takenaka(China)construction Co.Ltd
Shuzo Furusaka, (furusaka@archi.kyoto-u.ac.jp)
Department of Architecture and Architectural Engineering, Graduate School of Engineering, Kyoto University

Abstract

This paper reports the results of a comparative research project on the organization of international construction projects in China and the United Arab Emirates (UAE). This paper discusses three actual international projects that were carried out in the UAE and China. We compare the differences in the formation of the project team organizations and the conflict within the organizations to present the characteristics of Chinese and Japanese overseas project delivery systems, clarify the features of overseas project team organizations, and identify the strengths and weaknesses of each organization.

This paper is a part of an on-going research project initiated to explore the quality confirmation, procurement, and contracting system of overseas construction projects. The fundamental goal for future research is to explore how an international contractor can work more effectively in overseas construction markets, especially those with complex surroundings. The results of this study might benefit contractors who wish to engage in or have engaged in overseas projects, help them avoid some of the same problems that were pointed out in the research, and provide more rational considerations to improve competitiveness.

Keywords: International Construction Project, Project Organization, UAE, China, Japan

1. Introduction

Over the past decades, China and the Middle East have developed into two of the most dynamic construction markets in the world, which has created more opportunities for international contractors to enter these construction markets. This is particularly true in the United Arab Emirates (UAE); according to World Bank estimates, 60%-70% of all development investments in Third World countries are ploughed into construction activity. The Engineering News Record has estimated that, in recent years, more than 2000 international construction firms have been competing for work in the UAE. By now, many large-scale or fast-track projects completely depend on these foreign contractors.

After a review of the existing literature, international construction projects were found to be distinct from non-international constructions in that the former involve interactions among individuals, organizations, and agencies from diverse national backgrounds and cultural contexts. Such interactions, even on technologically routine international construction projects, often lead to additional misunderstandings, increased transaction costs, friction between project participants, and coordination and communication difficulties (Orr 2005). Consequently, to succeed in the international marketplace, construction businesses must effectively and efficiently deal with the diverse cultures they encounter. However, the UAE construction industry is more complicated as it involves more complex factors. In addition to the intensified market competition, laws, and regulations, the national culture is a very obvious factor. Furthermore, consulting engineers come from different counties, mainly in the West such as the UK, the USA, France, and so on, and the workforce comes from India, Pakistan, Bangladesh, Sri Lanka, the Philippines, and, increasingly, China. Such cultural differences are an important issue in all aspects of project management, from the tending and negotiation phase to construction operations (Jim 1986).

According to researchers who identified risks in the UAE construction market, excluding external risks such as “inflation and sudden changes in prices” and “shortages in resources supply”, internal risks such as “performance and management of contractors and delays of material supply by suppliers” and “the lack or departure of qualified staff from the contractor side” are significant issues in the UAE construction market (Sameh 2008). Due to the diverse and complex nature of these issues, problems such as cost overruns, schedule delays, and conflicts face foreign contractors; these problems have started growing and become readily apparent in the UAE construction market.

2. Study objectives

As mentioned above, a project is an open system that has interrelationships and interaction with its surrounding environment. Thus, we looked at a construction project as a focal organization consisting of actors with which a project management system has direct links. The cultural factors appear at three levels: (1) as internal forces when it concerns the project personnel and work groups; (2) as external forces when it concerns adaptation to the cultural environment of the host country and interaction with other actors involved in the project; and (3) as an organizational culture when it concerns the relationship with the headquarters and as a product of the construction firm (Hossein 1992).

For this purpose, we focus here on the organization of the project management system. The study aimed for a better understanding of (a) the information of project team organization and how the organization is influenced by the construction environment (b) and an explanation of the unique conflicts that arise in multicultural project team organizations.

3. Methodology

Because this paper is presenting an initial study on this subject, three actual projects were carried out in addition to documental research in general. Four clusters of variables, including the project organization, composition of work force, actors involved in the project, and project performance, were studied in detail.

In addition to a detailed individual study of each project, semi-structured interviews with general contractors and research into general information on each country or area were conducted. These justified the legitimacy of the conclusions reached on the differences in management approaches, principles, and backgrounds between the general contractors from each country and project.

The three projects presented in this paper are as follows.

Table 1: Outline of projects

Project	E	F	G
Location	Shanghai, China	Dubai, UAE	Dubai, UAE
Client (CL)	Private	Private	Government
Consultant/Architect (AR)	Chinese firm	Lebanon/Japanese firms	British/Chinese firms
General contractor (GC)	Japanese A Company	Japanese B Company	Chinese C Company
Construction period	13 months	17 months	12 months
Building purpose	Factory	Apartment building	Warehouse
Contractual arrangement	Design Bid Build	Design-Build	Design-Build

E Project

This case represents a simple construction project of a factory in Shanghai, China. The project was commissioned by a Japanese private investor. The project delivery system was design-bid-build (DBB) contracting. The GC was a major contractor of A Company of Japan. The subcontractors (SCs) were local Chinese companies. All of the workers were Chinese. The project was not complex in

terms of building technique, but the GC's construction manager changed twice, and the project overran both cost and time.

F Project

This project involved the construction of a 17-storey apartment building. The project delivery system was design and build (DB) contracting. The client was a large UAE-based multinational corporation. The consultant was an Arab firm. The GC was B Company of Japan. The SCs were domestic companies, and the workers came from India; some of the general contractor's own workforce (WF) came from Thailand. At the intermediate stage, the project had overruns of time and cost.

G Project

A major warehouse project was commissioned by the UAE government. The project was complex, and urgency was an important factor, the project duration was 12 months. The project delivery system was DB contracting. The consulting engineers were from the UK, and the client was Arab. The workforce comprised people of different nationalities: 80% of the workers came from China, and 20% of the workers came from India. A diversified project management team headed by a Chinese project manager was arranged. An example of the managerial issues in this project was the gaps between the Chinese general contractor and British consultant.

4. Project organization analysis

E Project

The project team organization chart of E project is shown in Fig.1. It is a distinctive project organization which has become a popular procurement style used by Japanese contractors in China. In this route, the GC agrees to a lump sum price with the client and is directly responsible for all of the work. This means that the GC carries the liability not only for the work it does directly but also the liability for work performed by the subcontractors and suppliers.

A second feature of the project is the organization of the construction supervisor (CS). According to Chinese law, as a normal project it must be managed by a CS. The CS is hired by the owner and acts as the owner's representative on site and supervises/manages all aspects of a construction project, including the quality, progress, and cost.

The third distinctive feature of the project is the organization of the design process. As shown in Fig. 1, the contractual arrangement is DBB. The client performs detail design work together with the architect before contractors are procured. In this case, however, only the domestic architect had a contract with the client. In truth, most of the main design work was carried out by the Japanese GC's supporting group. As shown in Fig. 1, the Japanese GC had in-house capacity; it provided staff assistance for site organization, reviewed the architectural structural M/E design, provided necessary working drawings, solved technical problems, did initial executive planning and value engineering, confirmed the work quality, etc.

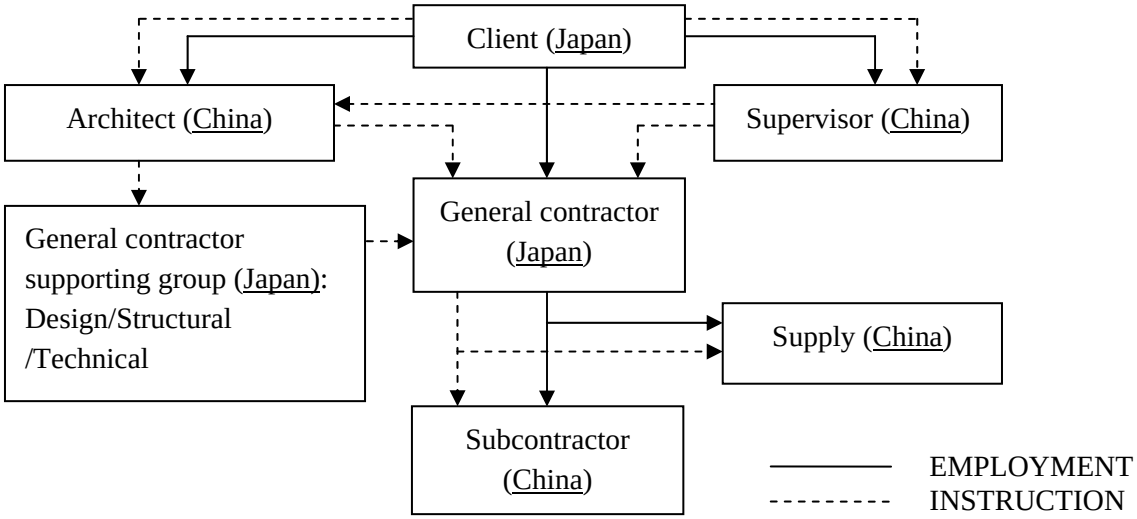

FIG. 1 Project Team Organization of E Project

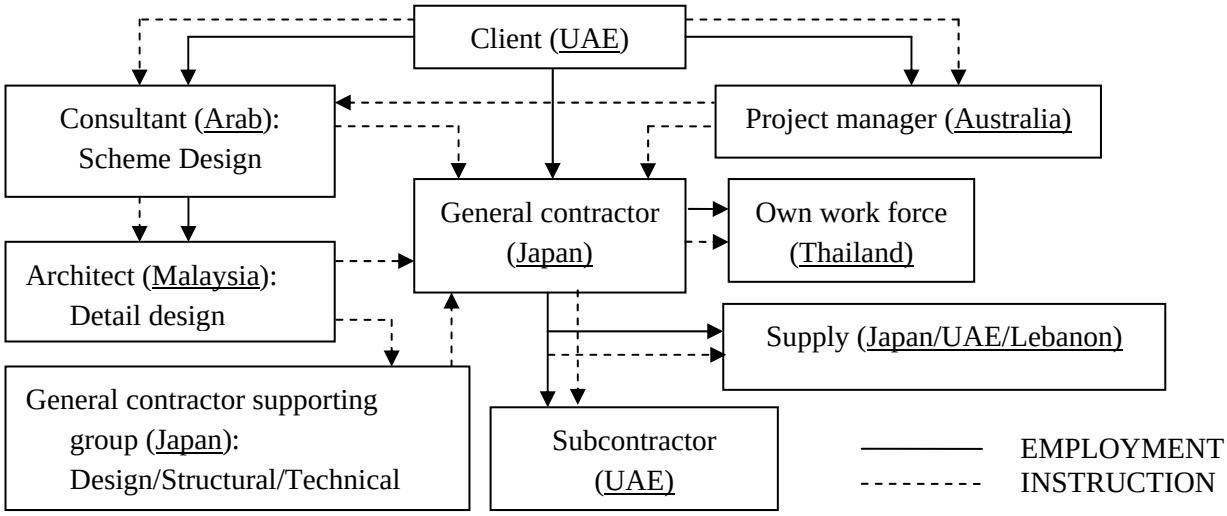

FIG. 2 Project Team Organization of F Project

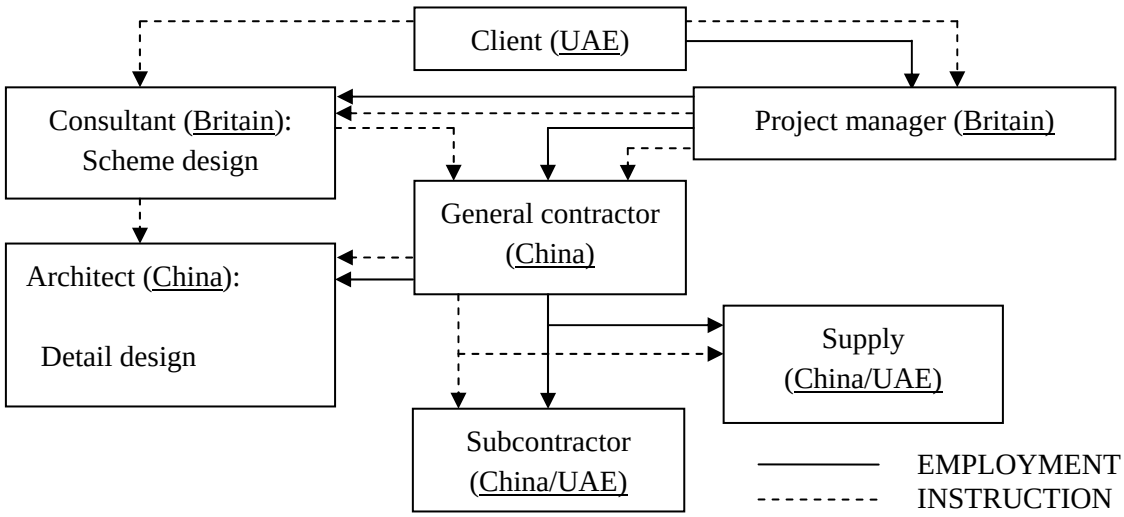

FIG. 3 Project Team Organization of G Project

F Project

The organization of F project is in sharp contrast with the structure of E project, which is shown in Fig. 2. Here, the client hired a project manager (PMr). The PMr was a large Australia-based multinational PM corporation with a contractual relationship based on the FIDIC contract. This contract clearly described the roles and responsibility of the PMr, such as giving instructions, issuing drawings, certifying the work, fairly determining and making decisions on the contractual issues, etc. Compared with the CS of E project, the construction manager had a wider range of rights and bore the full responsibility for the client.

In this case, an Arab architect consultant firm was hired by the client, but was different from that used for E project. The consultant only provided the scheme design; the detail design was subcontracted to another architectural firm from Malaysia. Based on the project brief and sketched drawings, the GC's architect team did the engineering design and specification.

In contrast to E project, there was a workforce (about 30 workers) besides the local subcontractor that was hired directly by the GC. They completed part of the project under GC's payroll. Almost all workers were well-disciplined labourers from Thailand who had been working for B Company in other countries. In this case, they acted as work group leaders in charge of general carpentry work, concrete, steelwork, and formwork.

G Project

The project team organization chart of G project is shown in Fig. 3. Here, the client hired a PMr, a British consulting firm. Similar to the PMr of F project, it also acted as the owner's representative and had overall control of the project, including selection of A/E & GC, design evaluation, construction work supervision, payment and financial arrangements, etc. In contrast to the PMr of F project, the construction manager had a contract relationship with the consultant and GC.

In this case a British architectural firm was hired by the PMr and was responsible for providing a scheme design. Detail design work was subcontracted to the GC. A Chinese architectural firm was hired by the GC to do the engineering design and specifications. The architectural firm set up a specific position with the title of resident architect (RA). The RA reported to the architect, was the representative of the architect on site, interpreted drawings and specifications issued by the architect, controlled the work quality, etc., and generally acted as the communication channel to the architect.

The chief architect noted that "In the UAE, fast-track construction is a popular delivery system. Scheme design and detail design are usually done by two consulting firms. In this project, we had to allocate two resident architects (RA) to the site because the detail design was according to the scheme design provided by the British consultant. If they changed the scheme, we changed the detail immediately, and issue these changes to the general contractor for construction feasibility."

Another feature of the project was the subcontractor and the work force. In contrast to the Japanese GC, the Chinese GC contracted with a subcontractor in China and brought the project management

team and construction workers from China. In this case, 80% of the subcontractors were the Chinese company and 90% of the structural work was carried out by its own workers from China who were in its direct employ. There were various reasons for this. One was the lower cost; another was that local labour was difficult to understand and there was not enough time to train them. Furthermore, because the workers were usually less educated, there tended to be a bias towards their traditions, religions, etc. This attitude often led to a conflict within a work group. Thus, using Chinese labour helped lower the risk of work conflict.

5. Conflict analysis

Through the project team organization analysis identified above, we now describe and analyse the following conflicts arising within the project team organization. The structure of the organization conflict relations is show in Fig. 4.

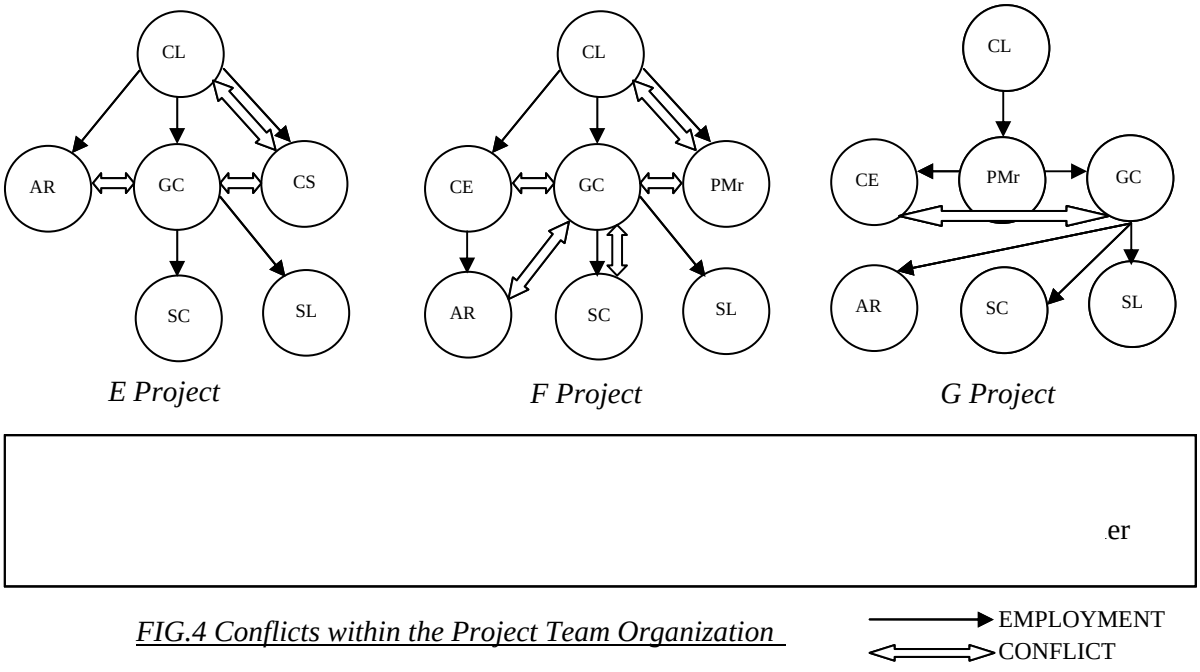

FIG.4 Conflicts within the Project Team Organization

E Project

Japanese Client (CL) vs. Japanese General Contractor (GC)

The conflicts between the client and general contractor were due to the contractual relationship. In China, it is a fact that Japan-based contracts tend to be awarded to Japanese GCs, even though the construction cost is much higher than that of local GCs. This is because these clients believe that Japanese GCs can provide better service than Chinese GCs. Furthermore, they usually select a lump sum contract, which is based on “mutual trust”. Therefore, the client mostly relies on the GC to bear all of the responsibility, even though, according to the contract, the architect and construction supervisor are still acting as representatives of the owner. Also, the general contractor needs to appreciate client expectations, which in many cases are beyond those specified in the contract

agreement. This causes conflict, but because of the ambiguity in the relationship between the client and general contractor, there is a "latent" conflict inherent to the relationship.

Japanese Client (CL) & General Contractor (GC) vs. Chinese Construction Supervisor (CS)

According to Chinese construction law, the CS is a service on behalf of the client to manage and supervise the overall activities or any specific activity of a project. CS has the power to ask the contractor to make corrections or order them to stop construction when they believe that the contractor does not conform to the design requirements. However, Japanese clients have a strong desire to withhold authority from the CS because they believe the Japanese GC's management ability is better than that of the Chinese CS. They hire a CS only to meet Chinese law. Furthermore, as shown in Fig. 1, the CS and GC did not have a contractual relationship; the GC seldom paid much attention to or even believed in the CS's role. During the construction process, the CS based their stance on facts and logic in their attempts to argue and oppose the GC's arguments; on the other side, the GC refused to listen to the CS's instructions. Consequently, a very easy problem became complicated. Because of the lack of CS's support the project overran both cost and time.

Japanese General Contractor (GC) vs. Chinese Architect (AR)

As discussed in the project organization analysis, in G project, most of the drawings were produced by the in-house capacity. However, in China it is difficult for a foreign GC to obtain the engineering design qualification certificate. In order to meet the requirements of the law, the Japanese GC had to send the drawings to a domestic architect contracted with the client. Without the domestic architect's modifications and judgments, the drawings could not be used for construction. Here, conflicts arose. The GC's in-house capacity usually enhanced the concept of constructability (some techniques are widely used in Japan) with the aim of ensuring that the construction job ran as smoothly as possible and met the completion date. In contrast, the Chinese AR focused on ensuring that the drawings were in accordance with Chinese design standards. Therefore, conflicting positions on design changes became a major issue between the GC and AR.

F Project

Japanese General Contractor (GC) vs. Australian Project Manager (PMr)

In this case, the conflict between the GC and PMr were concentrated on the additional cost and design changes. The GC pointed out that the PMr did not act impartially and make fair decisions. In contrast, the PMr insisted that their decisions were all based on the FIDIC contract signed by the CL and GC. However, both the GC and PMr knew that the major issues were in terms of the contract articles. Referring to the report (Paul 2008):

"Under both the current Red and Yellow Books the Contractor's obligation is to deliver the works that are "fit for purpose."

"The Silver Book is recommended for use on process, power and private-infrastructure projects where

the Contractor executes the Engineering, Procurement, and Construction. Risks for completion to time and quality are wholly transferred to the Contractor, the form being only suited to experienced contractors who are familiar with sophisticated risk management techniques."

A lack of understanding of FIDIC may have been the true cause behind the conflicts.

Japanese General Contractor (GC) vs. Arab Consultant and Malaysian Architect (AR)

According to the interviewees, the critical problem in the project's early stages was the inadequate flow of design information and too many misunderstandings of the design information. Delays in the production and transmission of drawings were held to be the main causes of the delay to the main frame construction. The major reasons were a lack of communication and collaboration between the GC and AR. The GC's manager noted that:

"As a reflection on this project, it seems to us that we should adjust the frame of our management organization. We defended our native (Japanese) staff excessively and ignored the importance of the local staff. For example, if we had set local staff as the assistant project manager or chief site engineer, the communication with the consultant and architect would not have been so bad."

Japanese General Contractor (GC) vs. UAE Subcontractor (SC)

Interviews with the Japanese GC revealed that both sides considered the SC&WF management as the thorniest problem. The problem was associated with the differences in religion, values, and belief systems; the concepts of contract, time, and planning; etc. In contrast to G and H projects, because of a lack of a host SC, the Japanese GC did not have enough SC to select from. Because of the high cost of Japanese labour, the Japanese GC could not bring workers from Japan.

In this case, there were two local contractor companies (one was equipment-specific, the other was garden-specific) that had previously contracted with GC, but the two contracts were terminated because of the lack of labour and rising prices. This resulted in the project's delays and extra costs.

One of B Company's project managers said, "In the UAE, there is an increased demand for manpower as the project number, size, and complexity increase. To add to this problem, the government imposes strict quotas for importing manpower from specific nations. Yet, the projects are almost all "tight schedule" projects. Local subcontractors are limited by a shortage of adequately qualified site staff. In the early construction stages, we did not hire our own workforce, but in the intermediate stages, we found that the project overran in terms of time and cost. So, we had to hire our own workers to improve the work efficiency and prepare for emergency needs."

G Project

Chinese General Contractor (GC) vs. British Consultant (AR)

In this case, the main conflicts were between the GC and AR. In contrast to the conflicts (GC vs. AR) of F project, here they were because of the design standard and material design. According to the GC's manager:

“In the UAE, the western AR prefers to use Western standards and codes, and the Chinese GC usually does not have much control over those. In order to make sure that the work met the standard, we had to spend time on understanding the standard and call the AR to confirm the work. Sometimes, we had to redo work because of mistakes in understanding. If possible, we also tried to recommend Chinese standard and codes to the AR.”

“The consultant was a Britain-based firm. They preferred to use British materials. We usually persuaded them that other materials had the same quality but a much lower price. But, they did not easily accept our advice.”

6. Summary and Conclusion

This paper presented illustrations of international project team organizations and a conflict analysis using case studies from China and the UAE. The following conclusions can be drawn from the study.

In the case of E project in China, the project team organization was rather oriented toward the general contractor, because the general contractor has a huge in-house capacity for both design and construction techniques. They were very keen to pursue the work they were responsible for to be on time with appropriate quality and cost. Although under the restrictions of Chinese design regulations, the conceptual process of a project was not carried out as effectively as in the case of the China project. Another critical factor influencing the overall project performance was the relationship with the Chinese construction superior. As a lesson, establishing a trusting partnership with the Chinese construction superior is very important for foreign clients and contractors.

For F project in the UAE, the project team organization appeared to be more complex. The organization involved participants from six countries. Such organizational complexities and other related environmental uncertainties led to delays, increased costs, and confusion among the participants. In this study, we found that Japanese general contractors were very weak in terms of contract management. For example, they did not have a full understanding of the FIDIC contract and did not carefully study the risk in the contract. These factors in turn also contributed to additional costs and time overruns. We also found that a lack of communication with the consultant and architect was a major risk to the Japanese general contractor and that it is very important to optimize the local staff’s capability. One more lesson from the study is that in the UAE, the general contractors should try to ensure a partnership with local subcontractors or prepare their own force (skilled workers) in order to deal with the labour risk.

The findings from G project indicate that Chinese contractors normally brought their own well-disciplined workforces and that the detail design was submitted by the counterpart from China. In contrast with F project, the organization was not so complex. In international projects, the Chinese contractors performed strongly by pursuing their “family” type project management, in which the general contractor, subcontractor, and material supply are all supported by their Chinese headquarters. This study will help other international contractors adjust their overseas project management strategies.

7. Limitations and Future work

As discussed above, this study was based only on a literature survey, document research, and case studies; furthermore, the case studies were limited to Japanese and Chinese. This means that the outcomes of the study were biased. Thus, the opinions and conclusions of the study cannot be regarded as popular theories. Further research is required to study the interactions in the procurement and contracting systems of different countries.

8. Acknowledgements

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